

REVIEW OF THE WASPS OF THE SUBFAMILY PSENINAE OF NORTH AMERICA (HYMENOPTERA: ACULEATA)

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INTRODUCTION

This paper is the result of some work done several years ago and brought up to date now in order to make available to entomologists the data accumulated in working over the collections in the United States National Museum and the Bureau of Biological Survey. Originally started as a joint undertaking with S. A. Rohwer, of the Bureau of Entomology, the matter is presented by the author alone because press of work on other subjects compelled his collaborator to give up the project after making an examination of the Fox and Cresson types in Philadelphia in 1926. The author regrets that this action was forced upon his colleague and accepts the full responsibility for the matter presented herein.

All material except four specimens of a few of the more common species, retained in the collection of the Bureau of Biological Survey for purposes of comparative work in connection with the examination of stomach contents of birds and mammals by the Division of Food Habits Research, will be found in the collection of the United States National Museum, and all type specimens of new species except one are deposited in that institution.

TAXONOMIC TREATMENT

The group is herein accepted as a subfamily of the family Psenidae, Pemphredoninae being the other subfamily of that family.

There has been considerable confusion in the North American literature regarding the application of the generic names in Pseninae, and also in determining the limits of the genera. It is with the purpose of clearing up the status and relations of these and their species that this paper is published. A careful examination has been made of the genotypes, and the decisions as to the validity of the various genera are based upon these examinations. The type specimens of most of the species described by Cresson, Fox, Packard, and Viereck have been examined to determine their status, and every

effort has been made to use in the keys and descriptions characters which it is hoped will clearly distinguish the species included in the paper. It must not be supposed that the tyro will be able at once to determine species with these data in hand, as the insects are not at all easy to determine, but with the aid of the figures and careful descriptions of the various structures of the species presented herein it is we hope a possibility for any capable hymenopterist to establish definitely the identity of the included species.

I find in this group, as I previously discovered in Tiphinae, a great similarity in the hypopygia of closely allied species, and consequently I have made but little use of these organs in distinguishing species. It may be noted, however, that there are several species in which the hypopygia are quite distinctive, that the ultimate and penultimate segments show more appreciable distinctions for the differentiation of species, and that the ultimate segment in *Diodontus* and *Psen* has a longer, more curved, and much sharper pointed apical process than does *Psenia*. In *Psen* the process is very acute, bare at apex, and stinglike, while in *Psenia* it is flat, rounded at tip, and furnished with microscopic hairs, the longer of which are at the tip.

There are characteristic features in the anal lobe of the hind wing of the various genera, but I have not made use of these in my keys, as there is difficulty in determining the exact form of the lobe in most specimens in collections because of the folding or warping of the wings.

The wasps are solitary, making their nests in stems of plants, in wood, or in the earth, and provisioning them with Hemiptera, mostly small leaf-hoppers. The museum collection contains large series of two species which were reared from cocoons found in the earth, but there are no records of the food habits of the species on the attached labels. Nothing is known of the parasites of the North American species, nor in fact if there are any.

KEY TO THE GENERA OF PSENINAE

1. Cubitus of hind wing with its base proximad of median transverse vein; occipital carina connecting with the carina surrounding mouth cavity considerably distant from median line of venter of head.----- ***Psen* Latreille**
Cubitus of hind wing with its base distad of median transverse vein.----- 2
2. Occipital carina connecting with the carina surrounding the mouth cavity considerably distant from median line of venter of head; face with a prominent median carina, which lies between bases of antennae and connects with a raised line which extends from each side of face below antennal bases.----- ***Diodontus* Curtis**
Occipital carina carried around back of head and not connected with the one surrounding the mouth cavity, sometimes rather widely separated from the latter on median line of venter of head; face without a prominent carina as above, and lacking lateral transverse raised lines.

***Psenia*, new genus**

Genus **DIODONTUS** Curtis

Diodontus CURTIS, Brit. Ent., vol. 1, p. 496, 1834. (Genotype, *Psen pallipes* Panzer, by original designation.)

Neofoxia VIERECK, Trans. Amer. Ent. Soc., vol. 27, p. 338, 1901. (Genotype, *Psen atratus* Panzer, by original designation.)

Distinguished from the other genera of Pseninae by the presence of a prominent vertical carina between the bases of the antennae, which is usually centrally sulcate on at least a part of its extent, and which connects with a more or less curved ridge or carina that runs across the face below the bases of the antennae. The second and third submarginal cells each receive a recurrent nervure (pl. 1, fig. 1), and the nervellus of the hind wing is perpendicular or almost so and situated proximad of the base of the cubitus (pl. 1, fig. 1). Occipital carina as in *Psen*, not carried entirely across the ventral surface of the head. Fore trochanters and basal third of the fore femora flattened on ventral surface in females. Pygidial area broad, with very inconspicuous punctures.

The cited genotypes of this concept are accepted as synonyms, and I have before me several examples identified as *atratus* by different European workers which belong to the collection of the National Museum. This species has the petiole of the abdomen similar to that of *trisulcus* Fox, but the propodeum outside of the enclosure is very coarsely rugose, and the head back of the eyes is vertically striate, neither of which characters is found in the North American species.

I present below a key to the North American forms which I consider entitled to specific recognition.

KEY TO THE SPECIES OF GENUS **DIODONTUS**

1. Females----- 2
 Males ----- 5
2. Petiole of abdomen rounded on sides, without a definite lateral marginal carina on each limit of dorsal surface and without a dorsocentral sulcus except on basal half or less of its length----- 3
 Petiole of abdomen not regularly rounded on sides and below, usually with distinct carinae at least on sides, and always with a well-defined but shallow sulcus on practically entire length of its dorsal surface----- 4
3. Propodeum with sides adjacent to enclosure distinctly striate though not very coarsely so; mesonotum with quite deep punctures anteriorly and laterally; petiole of abdomen without any trace of laterodorsal carina even at base----- **frontalis** (Fox)
 Propodeum with very shallow punctures and almost no definite striae adjacent to enclosure; mesonotum very feebly punctate; petiole of abdomen with a slight laterodorsal carina on basal half-- **occidentalis**, new species
4. Petiole of abdomen with a very distinct central carina on ventral surface; carina between bases of antennae distinctly sulcate to anterior extremity; larger species, 7 mm or more in length; propodeum almost smooth laterad

- of upper lateral angle of enclosure, becoming gradually more visibly but finely striato-punctate apically, the striae merging into the large lateral rugose areas on the sides----- **sulcatus**, new species
- Petiole of abdomen not distinctly carinate on center of venter, or with no visible sulcus on at least a part of anterior half of carina between bases of antennae; usually smaller species averaging about 5 mm in length; propodeum with fine but distinct striae on area bordering enclosure on entire dorsal aspect----- **trisulcus** (Fox)
5. Petiole of abdomen not sulcate in center of dorsum and without laterodorsal carinae; vertex glossy, with fine, rather shallow, scattered punctures.
frontalis (Fox)
- Petiole of abdomen with a very well developed carina on each side and very distinctly though shallowly sulcate on practically its entire length on dorsum----- 6
6. Entire vertex glossy, with very minute, shallow, and rather close punctures.
corusanigrens Rohwer
- Vertex at least partly striate or striato-punctate, the punctures larger and denser above and on sides, striae best seen when head is viewed at an angle from side----- **trisulcus** (Fox)

DIODONTUS FRONTALIS (Fox)

Psen frontalis Fox, Trans. Amer. Ent. Soc., vol. 25, p. 4, 1898.

In common with all the other species of the genus, including those of Europe, this species is shining black, with silvery hairs on most of the body, most evident on the head and especially the face, the tarsi mainly yellow, the fore pair entirely so, and the fore tibiae largely of that color. The antennal flagellum is usually of a more or less noticeable testaceous-yellow color on most of its length below, and the wings are hyaline, with the stigma fuscous.

Structurally the entire membership of the genus is very similar, and it is only by means of the rather minute characters cited in the above key that it is possible to distinguish them. Trivial though these characters appear at first sight, there is very little variation in them, and I believe they are entirely reliable for specific distinctions.

Originally described from Utah and Las Cruces, N.Mex. There are before me 2 females and 1 male, 1 female with the locality Boulder, campus of the University of Colorado, July 4 (T. D. A. Cockerell), and the other pair with merely the State label from the Baker collection.

The male was unknown to Fox. When Mr. Rohwer examined the Fox types in Philadelphia he made no notes on that of *frontalis*.

DIODONTUS TRISULCUS (Fox)

PLATE 1, FIGURES 1, 2

Psen trisulcus Fox, Trans. Amer. Ent. Soc., vol. 25, p. 5, 1898.

This is the only other species of the genus than the preceding one known to Fox. and as Mr. Rohwer did not examine the type when in

Philadelphia the matter of accurate identification of the species is rather doubtful, though I believe I am correct in accepting it as the most common eastern form now before me.

In September 1923 and May and July 1924, I collected about 100 specimens in the backyard of a city residence on Twenty-first Street, NW. in Washington, D.C., where both sexes were common flying alongside of a honeysuckle vine, which covered an old wooden out-building. I found the males to far outnumber the females, and did not discover the nesting places. It is highly probable that the species made its nesting burrows in the old building, as a specimen in the United States National Museum taken at Hyattsville, Md., bears a label with the wording "boring in wood." I have taken this species also at Glencarlyn, Va., in May, and have seen it from Greene County, N.Y., and St. George, Utah.

There is considerable difference in the sculpture of the propodeum in the sexes, the male having the areas bordering the enclosure very coarsely rugose, while the same areas in the female are only finely and closely striate.

Hypopygium of male as in plate 1, figure 2.

DIODONTUS CORUSANIGRENS Rohwer

Diodontus corusanigrens ROHWER, Proc.U.S.Nat.Mus., vol. 57, p. 229, 1920.

I have examined the type series of this species in the National Museum and can find no characters other than the glossy, unstriate, and minutely punctured frons to distinguish it from the preceding species, which it very closely resembles in all other characters. The carina between the bases of the antennae is very sharp and not so long as in the other species, and has but a slight narrow sulcus on the central part, but the carina is evidently rather variable in some of the species of which I have more material, so I do not care to depend upon it as a distinguishing character in this case.

Type locality, St. Louis, Mo. No other locality yet recorded.

DIODONTUS OCCIDENTALIS, new species

Female.—Very similar to *frontalis*, distinguished in the characters listed in the foregoing synoptic key. The vertex is also much less densely punctured than in the older species and has no indications of striae laterally, while the mesonotum has less dense and much shallower punctures.

Length, 6.5 mm.

Type.—U.S.N.M. No. 44204, from Tallac Lake, Tahoe, Calif., July 25, 1915 (E. P. Van Duzee).

DIODONTUS SULCATUS, new species

Female.—A larger species than *trisulcus*, and quite similar in structure, the distinctions consisting of those listed in the foregoing synoptic key. I had some doubt as to the propriety of accepting this as *trisulcus*, the type specimen of which was not examined by Mr. Rohwer, but I finally decided that the smaller and much more widely distributed and common species already dealt with is more likely to prove correctly identified as that species. There are some specimens of *trisulcus* in which the carina between the bases of the antennae has a slight sulcus on the anterior portion, but in such cases the petiole of the abdomen has no ventral median carina and the propodeum is differently sculptured.

The male is not known.

Length, 7–7.5 mm.

Type.—U.S.N.M. No. 44205, from Harrisburg, Pa., 1921 (Champlain). Paratypes, topotypical—1, by the same collector, July 11, 1921; 1, Wetzels Swamp, July 9, 1910; and 1, Carlisle, Pa., June 24, 1910, the last 2 taken by W. S. Fisher.

Genus PSENLULUS Kohl

Psenulus KOHL, Ann. Naturh. Hofmus. Wien, 1896, p. 293.

I have examined the genotype, *fuscipennis* Dahlbom, and can find no character other than one of the venation of the fore wing to justify the separation from *Diodontus*. The second cubital cell receives both recurrent nervures in *Psenulus*, while it receives but one in *Diodontus* as a general rule, though at times the first recurrent nervure may be interstitial with the first transverse cubital.

As the group is unrepresented in North America as far as is known at present, it is not necessary to deal further with the matter of the validity of the genus.

Genus PSEN Latreille

Psen LATREILLE Précis des caractères génériques des insectes, etc., p. 122, 1796. (Genotype, *Sphecx atra* Fabricius.)

Mimesa SHUCKARD, Essay on the indigenous fossorial Hymenoptera, p. 228, 1837. (Genotype, *Mimesa equestris* Wesmael.)

Dahlbomia WISSMANN, Ent. Zeitung, vol. 10, p. 9, 1849. (Genotype, *Sphecx atra* Fabricius.)

There are several rather well marked segregates of this genus in North America to which we give subgeneric status, all of them falling within the genus in its widest sense as limited in the generic synopsis given herein. Following is a key for the separation of these subgenera:

KEY TO THE SUBGENERA OF PSEN

1. Clypeus with two small rounded emarginations at apex, which give it the appearance of having three short acute teeth, the apex distinctly thickened (pl. 1, fig. 3); hind femur with an elongate oval patch of short soft hairs near apex on posterior surface, the piliferous punctures of the patch so close as to give the area covered by it the appearance of an opaque shallow depression (pl. 1, fig. 4); male abdomen without long soft fasciculate hairs at apices of any of the sternites; pygidial area of female narrow, shining, with a few large shallow piliferous punctures along each side and usually a slight longitudinal carina in center; both recurrent nervures received by second submarginal cell of fore wing; petiole of abdomen not sulcate above, with a series of minute piliferous punctures along each side, the hairs very short and inconspicuous----- **Pseneo**, new subgenus
Clypeus not tridentate, simple, or with a slight central notch or emargination on each side of which there is a more or less evident broadly rounded convexity or tooth, and rarely a second smaller tooth laterad of this; hind femur without an elongate oval patch of hairs on posterior surface near apex----- 2
2. Abdomen of male with soft fasciculate hairs at apex of third, or apices of third and fourth sternites, which project downward and are sometimes very prominent; petiole of abdomen not sulcate and without the usual series of piliferous punctures near each laterodorsal edge; second recurrent vein sometimes interstitial with the one separating second and third submarginal cells, or even entering the third; hind femur bare on upper half of posterior surface and with a rather noticeable series of soft hairs extending from near base to apex below middle of surface, ventrad of which there are numerous fine microscopic hairs----- **Psen** Latreille
Abdomen of male without fasciculate hairs at apices of any of the sternites; petiole sulcate above and with rather long hairs in lateral sulci, or if not sulcate then with a series of piliferous punctures along each side of the dorsum, the hairs being quite conspicuous; hind femur usually with entire posterior surface evenly covered with microscopic fine hairs----- 3
3. A complete linear carina present on vertex from between bases of antennae to anterior ocellus; abdomen almost always entirely black, petiole always with 2 more or less complete and rather prominent carinae, so that there are at least basally 3 evident dorsal sulci; episternauli distinct, eps 1 glossy and smooth----- **Mimumesa**, new subgenus
Frontal carina absent or almost so; abdomen almost always partly rufous; petiole usually flattened or convex above, sometimes with faint traces of rounded carinae, never with distinct carinae beyond middle, lateral sulci very shallow or absent, but the hairs always readily distinguishable; episternauli poorly defined, eps 1 not smooth, striate or striato-punctate.
Mimesa Shuckard

PSNEO, new subgenus

Similar in general habitus to *Psen*, differing essentially in having the clypeus in both sexes with two small rounded emarginations in center at apex, causing it to appear centrally tridentate (pl. 1, fig. 3); the petiole of the abdomen more or less rounded above, without dor-

sal sulci; the hind femur with an elongate oval patch of short pale hairs near apex on the posterior surface (pl. 1, fig. 4); both recurrent veins received by the second submarginal cell; abdomen of male without fasciculate hairs at apices of any of the sternites; and the pronotum in the males frequently with a sharp angle or tooth on each side above.

Subgenotype, *Psen kohlii* Fox.

Fox, in his paper on *Psen*,¹ divided the genus into several groups more or less in accord with the present arrangement, this segregate being referred to as "Group *kohlii*." There are, however, a few characters used in this paper which he did not utilize in his, and he was uncertain apparently as to the application of the character of the tridentate clypeus in both the sexes, while he included *fuscipes* Packard here, which is not in accord with my present findings.

Following is presented a key to the species known to me from North America.

KEY TO THE SPECIES OF SUBGENUS PSENEO

1. Males----- 2
 Females----- 6
2. Antennal flagellum with a minute pimplelike elevation on each segment from 2 to 9, inclusive, sometimes more elongate on first three segments----- 3
 Antennal flagellum with a much larger elongate glossy elevation on one side of most of the segments, which makes it appear somewhat monilliform----- 4
3. Abdominal petiole black; pronotum spicate on each side.
 spicatus, new species
 Abdominal petiole red; pronotum not spicate on each side.
 angulatus, new species
4. Tibiae and tarsi bright fulvous-yellow, very much paler than the glossy black femora; petiole of abdomen chestnut-red, darker on dorsum; second segment of the antennal flagellum without any raised line---- *kohlii* Fox
 Tibiae always partly or entirely darkened, fuscous, or dark brown, and not very conspicuously paler than the black femora, the tarsi sometimes largely fuscous; petiole of abdomen black, rarely reddish below and on sides----- 5
5. Second segment of antennal flagellum without any raised line evident; tarsi normally bright fulvous and conspicuously paler than tibiae.
 simplicicornis Fox
 Second segment of antennal flagellum with a small but distinct raised line; tarsi dark brown, not noticeably paler than tibiae----- *punctatus* Fox
6. Scutellum coarsely longitudinally striato-punctate; petiole of abdomen usually red----- 7
 Scutellum merely punctate, not striate on any part of disk----- 8
7. Legs entirely fulvous-yellow; pronotal lobes also of that color; coxae blackened at bases----- *fulvipes*, new species
 Coxae, trochanters, and femora largely black, tibiae usually darkened in part; pronotal lobes black----- *kohlii* Fox

¹ Trans. Amer. Ent. Soc., vol. 25, p. 1, 1898.

8. Petiole of abdomen red; tibiae and tarsi bright orange or fulvous-yellow; scape of antennae fulvous, with a brown mark above--- *carolina* Rohwer
 Petiole of abdomen black, rarely slightly reddish on sides and below; at least the tibiae dark brown or fuscous in part; scape of antennae black or dark brown----- 9
9. Pygidial area narrow, at upper extremities of the lateral carinae less than half as wide as its length in middle; tarsi bright orange or fulvous-yellow. *simplicicornis* Fox
 Pygidial area broader, at upper extremities of lateral carinae more than half as wide as its length at center; tarsi hardly paler than tibiae. *punctatus* Fox

PSEN (PSENEO) FERRUGINEUS (Viereck)

Mimesa ferrugineus VIERECK, Trans. Amer. Ent. Soc., vol. 27, p. 341, 1901.

According to notes on the type specimen in Philadelphia made by Mr. Rohwer, this species will run down to *kohlui* in my key, but it differs from any species I have seen in having the propodeum and basal two abdominal segments and petiole of the abdomen ferruginous. The pronotal lobes and legs are ferrugineous, in which respect it is similar to *fulvipes*. As the females usually are darker colored than the males, it is not probable that the specimen described herein as *fulvipes* can be the female of *ferrugineus*, as the propodeum and abdomen except the petiole are entirely black.

Length, 12 mm.

PSEN (PSENEO) KOHLII Fox

PLATE 1, FIGURE 4

Psen kohlui Fox, Trans. Amer. Ent. Soc., vol. 25, p. 9, 1898. (Male and female.)

Fox distinguished this group as the *kohlui* group, and I have before me some specimens compared with the type in Philadelphia by Viereck and by Rohwer, and one of these specimens bears a homotype label. It may be pertinent to note here that in addition to the characters listed in the key for the separation of the subgenera, all the species known to me have the hind coxae with a very prominent linear carina on their inner or opposed surfaces, and that the petiole of the abdomen is much more noticeably curved near base than in most of the other segregates.

The present species is readily distinguished from its nearest allies by the characters listed in the above key to the species, the bright fulvous-yellow tibiae and tarsi and red abdominal petiole of the male being quite distinctive. The antennal flagellum of the male has the elevations (sensory areas?) rather broad, distinctly shining though not glossy, highest at center, and most prominent on the sixth to eighth segments, the one on the third segment very inconspicuous

because it is of the same red color as the segment, and the one on second entirely lacking.

Length, 8-11 mm.

Originally described from Pennsylvania and Virginia. Material examined by me is from the following localities: Alabama, no other data; Fort Montgomery, N.Y., August 10, 1923 (F. M. Schott), a female with very dark, almost black, petiole; Huntington, Long Island, N.Y., August 19, 1917 (F. M. Schott), and a female without date, "on *Bidens*" (Bridwell); Plummers Island, Md., August 17, 1907 (A. K. Fisher); Glen Echo, Md., July 23, 1921, July 30, 1922, and August 30, 1923 (J. R. Malloch).

The specimens taken by me were swept from trees and bushes overhanging paths through the woods.

The female specimens with blackish red petiole can readily be distinguished by the rather coarsely striate punctate scutellum.

PSEN (PSENEO) SIMPLICICORNIS Fox

Psen simplicicornis Fox, Trans. Amer. Ent. Soc., vol. 25, p. 10, 1898. (Male and female.)

Mr. Rohwer has reported upon the characters of the type specimens and before me there is a female labeled by him as a homotype. He also notes that though the first locality mentioned by Fox is Virginia, it is the male which is from that State, and being the last to be described consequently this sex is the allotype, not the type.

The male is readily distinguished from that of *kohlui* by the darkened tibiae and black abdominal petiole. The tarsi are normally as pale as in *kohlui*, and the second flagellar segment has no raised line, but the third segment has the raised part more prominent and darker than in *kohlui*. The scutellum in the female is quite definitely longitudinally striato-punctate in *kohlui*, while in the present species it is sparsely punctate as in the male.

Length, 8-11 mm.

Originally described from North Carolina and Virginia. I have examined specimens from the following localities: Harrisburg, Pa., a series of reared specimens, Wetzels Swamp, September 1908 and April 1909 (P. R. Myers), and one specimen, same locality, November 12, also reared (G. M. Greene); Mount Holly, Pa., June 14, 1921 (Champlain and Knull); Beltsville, Md., August 6, 1916 (W. L. McAtee).

PSEN (PSENEO) PUNCTATUS Fox

Psen punctatus Fox, Trans. Amer. Ent. Soc., vol. 25, p. 9, 1898. (Female.)

I have before me a specimen which was compared with the type and is labeled homotype by Mr. Rohwer, and several specimens which

agree with it in all respects. The characters in the key should suffice for the identification of the sexes.

Originally described from Colorado and subsequently recorded from Nebraska. I have examined specimens in the National Museum, from Boulder, Colo., mostly with definite location as the campus of the university, and the months June, July, and August (T. D. A. Cockerell).

PSEN (PSENEO) CAROLINA Rohwer

Psen (Mimesa) punctata var. *carolina* ROHWER, Proc. Ent. Soc. Washington, vol. 12, p. 103, 1910. (Female.)

Originally described as a variety of *punctatus*, I consider it practically certain that this is a valid species and accept it as such, though the discovery of the male is desirable to confirm this decision.

The pale antennal scape and tibiae and tarsi, coupled with the red petiole, the distinctly yellowish facial hairs, narrower face, and rather greater size, 14–15 mm, distinguish the species from *punctatus*.

Localities, Raleigh, N.C., type, and Fluvanna County, Va.

Type.—U.S.N.M. No. 12363.

PSEN (PSENEO) FULVIPES, new species

PLATE 1, FIGURE 3

Female.—Shining black. Antennae including the scape and basal five segments of the flagellum fulvous-yellow, the apical section of the flagellum dark brown. Lobes of prothorax fulvous. Petiole of abdomen red. Legs except the coxae fulvous. Wings grayish hyaline, veins and stigma dark brown.

Frons glossy, sparsely punctured, a deep impressed line extending entirely across behind the posterior ocelli and curving forward outside of each to its anterior edge; carinate line from anterior ocellus to lower level of antennal insertions complete; basal segment of flagellum subequal to the next two in length. Mesonotum and scutellum rather coarsely rugoso-punctate, the former appearing quite coarsely striate centrally behind; propodeum with a rather large central glossy diamond-shaped area laterad of which it is rather finely rugoso-reticulate, the areas laterad of the enclosure quite coarsely rugoso-reticulate; upper portion of the mesopleura (eps 2) longitudinally rugoso-punctate, the lower portion vertically rugoso-punctate. Petiole convex above, the edges not sharp, the sides with a narrow shallow sulcus; pygidium narrower than in *punctatus*, with a single series of punctures on each side. Otherwise as *punctatus*.

Length, 11 mm.

Type.—U.S.N.M. No. 44206, from Coleta, Ala.; no other data (H. H. Smith).

PSEN (PSENEO) SPICATUS, new species

Male.—Shining black. Antennal scape shining black, flagellum dark dull brown, the basal 4 or 5 segments brownish yellow below; hairs of face silvery white. Prothoracic lobes and abdominal petiole black. Legs black to brownish black, the tarsi more noticeably brown. Wings grayish hyaline, veins and stigma dark brown, the costa with a brown tinge in cell beyond the stigma.

Frons glossy, with large deep punctures, which are contiguous in front and to some extent on sides, the impressed line behind posterior ocelli distinct; antennal flagellum very slightly thickened apically, the basal segment longer than the scape, segments 2 to 9 each with a small pimplelike elevation near middle on one side that is most distinct on 6 to 8 and sometimes slightly linear on 2 and 3. Thorax almost as in *fulvipes*, but the lower part of the mesopleura (eps 1) is less closely punctured and lacks definite rugae; propodeum with the enclosure rugose on entire extent, no smooth central diamond-shaped area present. Petiole as in the preceding species. Legs and wings normal. The most conspicuous feature of the species, and the one which gives it its name, consists of the spikelike projection on each lateral angle of the pronotum.

Length, 10.5 mm.

Type (U.S.N.M. No. 44207) and two paratypes.—From Beulah, N.Mex., August 8, 1900 (T. D. A. and W. P. Cockerell).

PSEN (PSENEO) ANGULATUS, new species

Male.—Differs from *spicatus* in the paler-colored legs, the tibiae being yellowish at base and apices and the tarsi almost entirely yellow. The bases of the flagella are more completely yellow. Petiole of abdomen red.

The antennal structure differs from that of *spicatus* as stated in the key, and the prothorax has the angles very much less produced.

Length, 9 mm.

Type.—U.S.N.M. No. 44208, from Nelson County, Va., August 10, 1924 (W. Robinson); paratype, Roxborough, Pa., September 28, 1908 (C. T. Greene).

Subgenus PSEN Latreille

Reference as under genus, page 6.

Our conclusions as to the identity of this subgenus are based upon an examination of the type of the segregate in the collection of the National Museum. The male differs from that of any found in North America which are retained herein in having the antennal flagellum flattened, most of the segments except a few at the base having an oblique groove or depression on one surface, and the

scape markedly swollen; the mid tarsus is modified, the basal segment having 2 spines on one side and most of the others having some minute black bristles on one side. The abdominal petiole in both sexes is flattened above much as in *monticola* Packard, the wing venation is also as in that species, and the pygidium of the female is rather dull, owing to the presence of microscopic shagreening on its entire surface, while there are rather large piliferous punctures almost evenly distributed over it. The male of the genotype has the fine erect hairs at the apices of third and fourth abdominal sternites more or less matted centrally and forming fasciculae. The antennae and mid tarsi of the males of the North American species are not abnormal in form, nor are they in the females of any of the included species, so that we disregard these as subgeneric characters. The hind coxae lack the sharp carina on inner side so characteristic of *Pseneo*. This was called "Group *monticola*" by Fox. He had but one species.

Below is presented a key to the North American species available to the author.

KEY TO THE SPECIES OF SUBGENUS PSEN

1. Males----- 2
 Females----- 5
2. Only fourth abdominal sternite with fasciculate soft hairs, which are confined to middle of apex and are very short, or the third also with a very short narrow tuft of such hairs on central line at apex; petiole of abdomen evenly rounded above, without angular lateral edges; entire abdomen shining black----- 3
 Third and fourth abdominal sternites each with prominent fasciculate hairs at apices, which extend almost across ventral exposure of apices; petiole flattened above, lateral edges quite sharp; abdomen partly red----- 4
3. Petiole of abdomen slightly angulate along sides, but without a distinct lateroventral carina; mesopleura with large, deep, almost contiguous punctures on most of its surface----- *unifasciculatus*, new species
 Petiole of abdomen with a distinct raised marginal line or carina on each lateral edge of its ventral surface; mesopleura with quite small, shallow, isolated punctures on most of its surface----- *myersiana* (Rohwer)
4. Petiole of abdomen red, remainder of abdomen black; antennal flagellum simple; mesonotum except the anterior lateral portions coarsely striatopunctate; second recurrent nervure generally entering second submarginal cell close to its apex----- *erythropoda* Rohwer
 Petiole black, remainder of abdomen red; flagellar segments 3 to 10 each with an elongate swelling or carina along one side; second recurrent nervure generally entering third submarginal cell a little beyond its base (pl. 1, fig. 5)----- *monticola* (Packard)
5. Abdomen, femora, and tibiae black; clypeus with two short rounded teeth at apex, which are rather close together; petiole evenly rounded above; pygidial area narrow, almost glossy, the shagreening noticeable only at apex, and with a series of fine hairs along sides---- *myersiana* (Rohwer)

- Abdomen in part, and tibiae entirely, reddish yellow; clypeus not toothed, petiole slightly flattened above, with a rather pronounced ridge or carina along each laterodorsal edge; pygidial area broader, densely shagreened and dull on all, or a large part, of its surface.----- 6
6. Petiole of abdomen red, remainder of abdomen black; pygidial area entirely shagreened and dull, with a series of fine hairs along each side; mesonotum coarsely striato-punctate on almost entire extent.

erythropoda Rohwer

Petiole black, remainder of abdomen red; pygidial area shagreened on rather more than its apical half and on sides, glossy basally, and with several series of stiff hairs apically and laterally; mesonotum with fine separated punctures on its entire extent----- monticola (Packard)

PSEN (PSEN) MONTICOLA (Packard)

PLATE 1, FIGURES 5, 6

Mimesa monticola PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 407, 1867. (Male.)

This species is readily recognized in both sexes by the bright-red abdomen and its black petiole. The clypeus has a rather broad central transverse extension that lacks definite lateral teeth. Wing venation as in plate 1, figures 5 and 6.

Length, 8-10 mm.

Localities: Mount Washington, N.H. (Packard); Philadelphia, Pa. (Fox); Glen Echo, Md., July 1 to 23, 1921 to 1923 (J. R. Malloch); Plummers Island, Md., July 28, 1912 (H. L. Viereck); Glencarlyn, Va., July 14, 1907 (F. Knab); Georgetown, D.C. (H. H. Smith); Rosslyn, Va. (H. H. Smith); Falls Church, Va., July 21, 1922 (R. A. Cushman) and July 2, 1912 (W. Middleton); Harrisburg, Pa., July 4, 1910 (W. S. Fisher); Pyziton, Clay County, Ala. (H. H. Smith).

The Alabama female has the femora entirely fulvous, differing thus from other examples of that sex before me, which have the femora largely blackened.

The specimens which I took at Glen Echo were swept away from the overhanging branches of trees alongside a path in the woods on the north side of the road.

PSEN (PSEN) ERYTHROPODA Rohwer

Psen (Mimesa) erythropoda ROHWER, Proc. Ent. Soc. Washington, vol. 12, p. 182, 1910. (Female.)

One point in connection with the original description of this species is that the abdominal petiole is not included among the portions of the insect that are listed as red in color. Sometimes this is slightly brownish, but it is never black.

Length, 8-14 mm.

Localities: Great Falls, Va. (type); Plummers Island, Md., June 4, 1910 (A. K. Fisher); Glen Echo, Md., June 25 to July 17, 1921 and 1922 (J. R. Malloch); Cabin John, Md., July 31, 1921 (J. R. Malloch); Dauphin, Pa., July 18, 1917 (E. Daecke); Tryon, N.C. (W. F. Fiske).

One specimen listed has mounted with it a spittle-bug (*Aphrophora quadrinotata* Say), which is fully as great in bulk as the wasp. I assume that the wasp intended the bug as provision for its nest, but no data are given on the label as to the circumstances attending their capture.

PSEN (PSEN) MYERSIANA (Rohwer)

Mimesa myersiana ROHWER, Ent. News, vol. 20, p. 324, 1909. (Male and female.)

I have seen only one specimen in addition to the reared series from which this species was described. A feature of this and the other species from North America with the exception of *monticola* is the impressed line behind the posterior ocelli, which extends entirely across to the outer edge of each of the ocelli and connects with a similar line at the center which extends forward to the anterior ocellus. This character does not occur in the genotype, *atra* Fabricius.

Length, 8–10 mm.

Localities: Wetzels Swamp, near Harrisburg, Pa. (P. R. Myers); and Williamsport, Md., May 24, 1915, acc. no. 2888 (J. A. Hyslop).

The type series bears no indication of where the cocoons from which they were reared were obtained, but many parts of Hemiptera, all apparently Homoptera, are attached to the outsides of the cocoons. The specimen from Maryland bears a label with notation: "Prov. nest with *Acutalis calva*" [= *Micrutalis calva* (Say)].

PSEN (PSEN) UNIFASCICULATUS, new species

Male.—Shining black, abdomen glossy, bases of hind tibiae and all tarsi slightly brownish; antennae entirely black; maxillary and labial palpi brownish testaceous; wings hyaline, veins dark. Face densely silvery haired; fasciculate sternal hairs tawny.

Front with large deep contiguous punctures, which become smaller and more compact as they approach the antennal bases, and sparser behind ocelli; central third of clypeus produced downward, transverse at apex. Mesonotum with large deep punctures, which are contiguous and more or less striately arranged on most of the disk; propodeum along the sides of the enclosure rather coarsely rugose, becoming very coarsely so on curve and gradually less so below; mesopleura glossy, moderately coarsely but not contiguously

punctate on disk. Abdominal petiole longer than hind femur, almost rounded, and bare above, carinate on each side below and with a series of fine hairs mesad of each edge. Only the fourth sternite fasciculate, the hairs much shorter and occupying a much smaller proportion of the width of the apex than in the other species except *myersiana*. Hind tibia without dorsal spines. Second cubital cell receiving both recurrent nervures.

Length, 10 mm.

Type.—U.S.N.M. No. 44209, from Beulah, N.Mex., August 8, 1900 (T. D. A. and W. P. Cockerell).

Two male specimens.

MIMUMESA, new subgenus

This subgenus is distinguished from the others by the following group of characters, though it is rarely the case that all of them will apply to one species: A well-defined raised line between the antennal insertions extending from anterior ocellus to below level of antennae and usually at the latter point connected with a small tubercle from which extends on each side a slightly raised line laterally; petiole of abdomen normally very distinctly grooved, one groove on each side of the dorsum, which widen out behind so that the raised central part tapers to a point behind, and the latter is usually more or less noticeably sulcate basally; clypeus sometimes with two central teeth, which are quite closely placed and rounded, rarely with a much smaller tooth on each side of these; the small upper part of the mesopleura (eps 2) glossy, well distinguished from the large lower part by an impressed line (episternauli), and with at most very fine indistinct punctures, never striate or striato-punctate; abdomen usually entirely black, red at base in *clypeatus*.

Below is given a synoptic key to the species available and under each of the old species recorded in the text are given notes on the examination of the types.

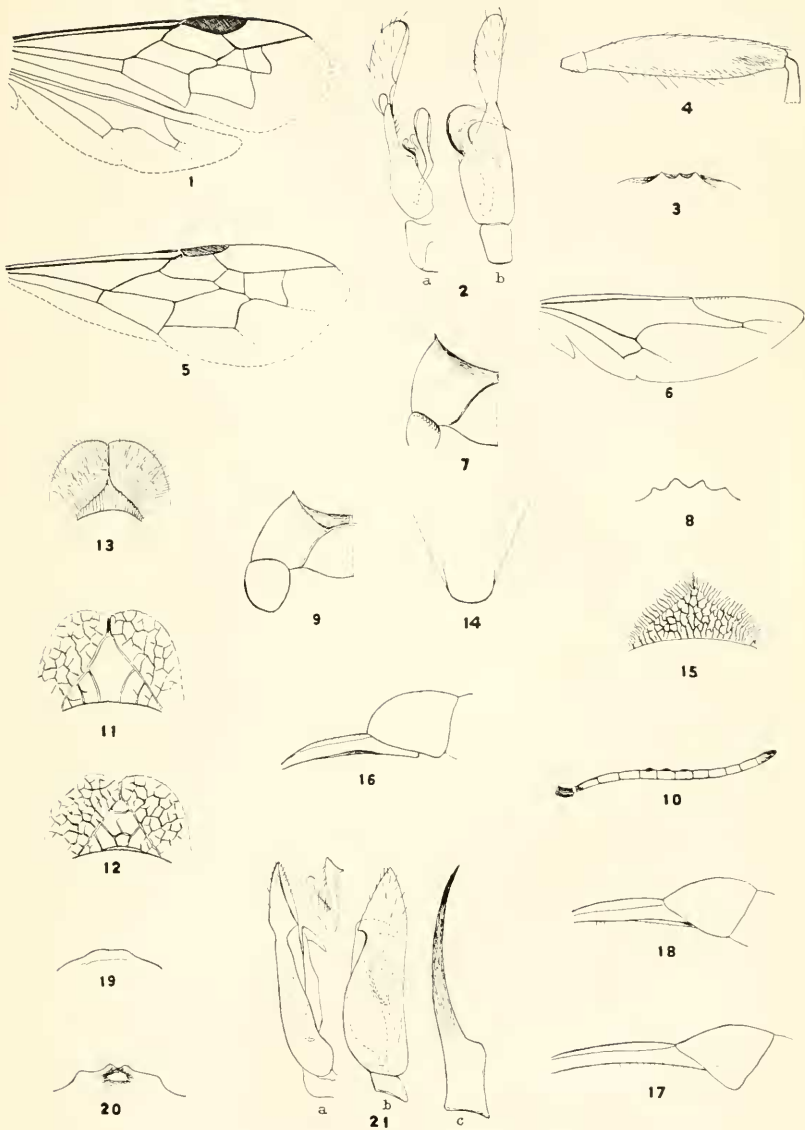
Subgenotype, *Psen niger* Packard.

KEY TO THE SPECIES OF SUBGENUS MIMUMESA

1. Face with dense decumbent golden pile in female, silvery white haired in male; antennal flagellum rufous above and below on a little more than its basal third, black beyond; pygidial area narrow, almost parallel sided, about three times as long as its width at upper extremities of the lateral ridges, surface shining, with a series of large piliferous punctures along each side of basal half; legs black, tibiae and tarsi orange-yellow.

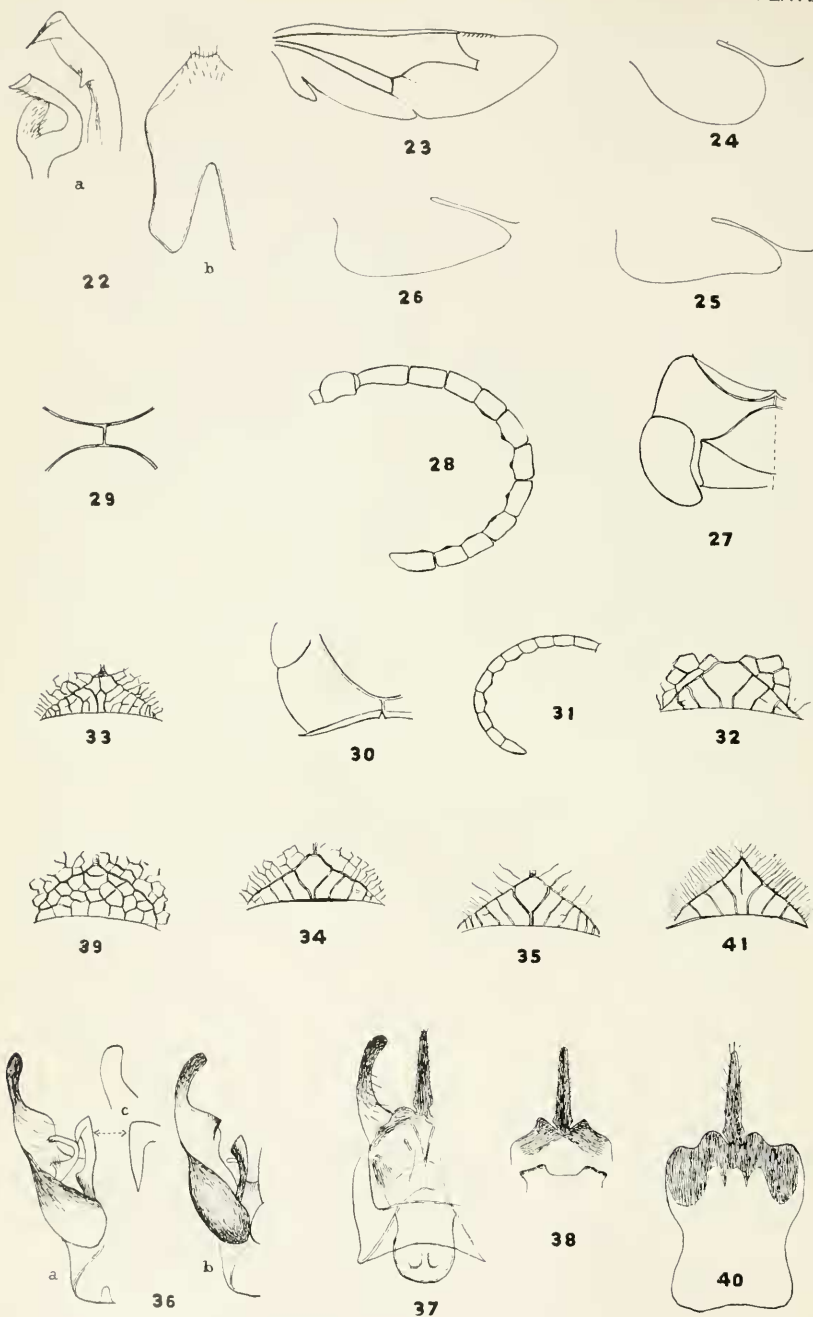
johnsoni (Viereck)

Face with white or silvery pile in both sexes; antennal flagellum not yellow at base and black at apex----- 2



WASPS OF THE SUBFAMILY PSENIINAE.

FOR EXPLANATION SEE PAGE 69.



WASPS OF THE SUBFAMILY PSENINAE.

FOR EXPLANATION SEE PAGE 60.

2. Abdomen red on basal 2 or 3 tergites, the petiole and apex black; occipital carina not connected with the one round mouth margin, evanescent on its inner extremities (pl. 1, fig. 7); tegulae shagreened on their entire surface, less distinctly so on posterior fourth in male, in female with punctures or striae to their apices; clypeus of female with four short teeth, lateral pair very short (pl. 1, fig. 8), teeth in male less distinct; antennal flagellum not noticeably yellowish; pygidium of female broad, with microscopic shagreening and rather dense and quite large piliferous punctures on entire surface, the pile mostly lying close against surface so that sculpture is difficult to distinguish----- *clypeatus* Fox
- Abdomen nowhere red, sometimes some of the tergites brown or yellowish brown at apices; occipital carina connected with the one round mouth margin (pl. 1, fig. 9); tegulae in both sexes with apical half or more glossy and impunctate----- 3
3. Males----- 4
- Females----- 13
4. Antennal flagellum testaceous-yellow below, brownish above, segments 2 to 6 with raised line on one side, first 2 with this quite inconspicuous, segments 4 to 6 with the raised part blackish brown and very conspicuous, apical segment black, very strikingly differentiated from preceding segments (pl. 1, fig. 10); head with postocellar region glossy, very sparsely and feebly punctured, without any evidence of striae; mesonotum with moderate-sized punctures and without striae except on posterior margin. *mellipes* Say
- Antennal flagellum either entirely dark or, if yellowish below apical segment, not strikingly darker than preceding segments, and raised area on none of segments is as markedly developed as nor strikingly darker than remainder of segments that bear them----- 5
5. Mesonotum striate or punctato-striate on disk----- 6
- Mesonotum glossy, and with separated punctures and no striae on disk-- 9
6. Mesonotum punctato-striate; petiole of abdomen with central raised part on dorsum consisting of a single rather sharp carina on apical half which is widened out and flattened on basal half or less and has two or more irregular impressed lines on surface which divide it into three quite definitely undulated fine carinae; underside of antennal flagellum reddish yellow on almost its entire extent, the usual raised lines on one side of segments 2 to 10 indistinguishable----- *canadensis*, new species
- Mesonotum definitely striate on most of its disk; petiole of abdomen with dorsocentral carina with a single clean-cut sulcus on practically its entire extent, tapering to a mere line posteriorly and widened anteriorly; antennal flagellum dark, with well-developed raised line or spot on segments 2 to 10 or 2 to 9----- 7
7. A raised line or spot present on flagellar segments 2 to 9; enclosure of propodeum with entire surface reticulated with raised lines, no large central diamond-shaped glossy bare area; tarsi yellowish white, mid pair with fifth segment, hind pair with second to fifth segments, browned on at least upper surface----- *striatus* (Viereck)
- A raised line or spot present on flagellar segments 2 to 10; enclosure of propodeum with a more or less well differentiated central diamond-shaped glossy area----- 8
8. Tarsi yellowish white, mid pair with fifth segment, hind pair with second to fifth segments, browned at least above; vertex behind ocelli laterad of outer ocellus on each side microscopically transversely striate.

longicornis Fox

Tarsi dark brown or fuscous, becoming a little paler apically on fore and mid pairs; vertex nowhere microscopically striate.

bermudensis, new species

9. Petiole of abdomen with dorsocentral carina quite sharp and linear on apical half, flattened on basal half or less and with two irregular impressed lines which divide it into three irregular carinae; antennal flagellum reddish yellow below on almost its entire extent, and without any visible raised line or spot on segments 2 to 10----- *canadensis*, new species

Petiole of abdomen with usual central carina sulcate on almost its entire length, the sulcus clean-cut; antennal flagellum usually black, and with some of the segments with a well-developed raised line or spot on one side----- 10

10. Antennal flagellum with distinctly raised lines present only on seventh and eighth and rarely on sixth segments, underside not noticeably yellow.

niger Packard

Antennal flagellum with several of segments proximad of seventh, with a distinctly raised line on one side----- 11

11. Head behind ocelli rather closely punctato-striate----- *mixtus* Fox
Head behind ocelli without trace of striae----- 12

12. Raised lines on third to sixth segments of flagellum very narrow, rather sharp, and most of them extending entire length of segment; enclosure of propodeum with ridges high----- *propinquus* Kincaid

Raised lines on third to sixth segments of flagellum as wide as those on seventh and eighth, and not extending entire length of segments; enclosure of propodeum with ridges not much elevated----- *leucopus* Say

13. Mesonotum finely but distinctly longitudinally striate on major portion of its surface; head behind ocelli with very fine transverse striae; petiole of abdomen trisulcate on dorsum; pygidium broader than in *niger* and its allies, with microscopic shagreening, which causes it to appear less glossy than in that group, and with rather large piliferous punctures on most of its extent, though not so broad nor so densely punctured as in *clypeatus*; antennal flagellum not noticeably pale below----- 14

Mesonotum not closely and finely longitudinally striate, usually with isolated punctures, rarely more or less striate on posterior margin----- 15

14. Fore and mid tarsi pale testaceous-yellow, only apical segment of latter browned; mesopleura closely but not very coarsely transversely striate in center (eps 1), anteriorly dull----- *longicornis* Fox

Tarsi as in *longicornis*, hind pair with apical three segments brown; mesopleura rather coarsely transversely striate above----- *striatus* (Viereck)

All tarsi yellowish on bases and largely infuscated apically; mesopleura glossy on practically its entire extent, anteriorly with a few faint striae but not dull on any part----- *bermudensis*, new species

15. Antennal flagellum with entire lower side bright testaceous-yellow, pygidium broad, entirely dull because of presence of deep contiguous piliferous punctures; petiole of the abdomen with dorsocentral carina not sulcate except at base----- 16

Antennal flagellum entirely dark or very slightly pale below; pygidium narrow and glossy, the punctures rather large and less numerous; petiole of abdomen with dorsocentral carina densely sulcate to or almost to apex----- 17

16. Clypeus with central produced part transverse; center of mesopleura (eps 1) dull because of closely placed transverse fine striato-punctate sculpturing.

mellipes Say

Clypeus with a slight but quite evident central emargination of central produced part; mesopleura entirely glossy, transverse striae on central portion very faint, distinct only on anterior margin.

canadensis, new species

17. Pygidium broad, closely shagreened, and densely piliferous punctate.

propinquus Kincaid

Pygidium narrow and glossy, piliferous punctate sparsely on sides.----- 18

18. Head finely transversely striato-punctate behind ocelli; mesopleura (eps 1) with fine transverse striae, which are faint only on central part of disk.

mixtus Fox

Head either with fine punctures or practically smooth; mesopleura less distinctly sculptured, especially on center of disk.----- 19

19. Face not densely silvery haired, the hairs less closely appressed than usual; enclosure or propodeum with ridges quite high; postscutellum more densely punctured than scutellum.----- *niger* Packard

Face densely covered with appressed silvery hairs; enclosure or propodeum with ridges low; postscutellum not more closely punctured than scutellum.

leucopus Say

PSEN (MIMUMESA) JOHNSONI (Viereck)

Mimesa johnsoni VIERECK, Trans. Amer. Ent. Soc. vol. 27, p. 340, 1901.

? *Psen fuscipes* PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 402, 1867.

I have some doubt as to the synonymy suggested above, but Mr. Rohwer reports my specimens belong to *johnsoni*, and as there is no specimen of Packard's species in Philadelphia which he could study, the matter is left in doubt, though there is reason to believe the two names apply to the same species.

Fox placed *fuscipes* in the same group as *kohlii* but stated that he did so provisionally, noting that it differed from the four species preceding it in the subtle punctation of the head and dorsulum. The only specimen he had for examination was the broken type specimen and he suggested that the examination of perfect specimens "may show differences requiring the relegation of the species to another group."

The species is the largest of the present segregate, 9-10 mm in length, and the golden pubescence of the face in the female is quite distinctive, no other known to me having the hairs of this color. The pygidium is glossy, with large separated punctures, the petiole of the abdomen has the dorsocentral carina shallowly sulcate to beyond the middle, and the mesonotum is rather variably punctured, sometimes much coarser than one would expect from Fox's note, if the species are synonyms. Antennal flagellum with elevation on one side of all dark segments except eleventh in male.

Originally described from both sexes, the type localities being Riverton, N.J., and Lehigh Gap, Pa. Specimens before me are from the following localities: Middlesex County, N.J., specimen compared with type female by Mr. Rohwer; Riverton, N.J., June 13, 1919 (G. M. Greene); Wetzels Swamp, Harrisburg, Pa., June 21,

1908 (P. R. Myers); Glen Echo, Md., August 10, 1923 (J. R. Malloch); and one male, Takoma Park, Md. (C. N. Ainslie).

PSEN (MIMUMESA) NIGER Packard

PLATE 1, FIGURE 9

Psen niger PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 399, 1867.

This was selected by Fox as the species for which the group was named, and I am using it as the subgenotype, having both sexes available.

The species is closely allied to the next two, from which it is distinguished by the characters cited in the key.

Fox made use of the rather sparse and quite erect hairing of the face and clypeus in distinguishing this species, *mixtus*, and *leucopus* from their allies, but the character is not a very good one, though in the females of *niger* at least it does occasionally strike one as rather distinctive. The head behind the ocelli is very similarly punctured in *niger* and *leucopus*, the principal distinguishing characters being found in the enclosure of the propodeum.

Length, 6.5–8 mm.

Fox decided that Packard had confused the sexes of two species under *niger*, and he retained as *niger* the species which he considered "best befits the name." The localities cited by Fox are Virginia and Canada, without more definite location. I have before me examples from the following localities: Massachusetts (Baker collection); Long Island, N.Y., and Milwaukee, Wis. (Ashmead collection); Canada, without definite locality (Baker collection); Hanover, N.H., and Sherbrook, Canada (Ashmead collection); and Nerepis, New Brunswick, August 22 (A. G. Leavitt); Tallac Lake, Tahoe, Calif. All are from the collection of the National Museum.

PSEN (MIMUMESA) LEUCOPUS Say

Psen leucopus SAY, Boston Journ. Nat. Hist., vol. 1, p. 370, 1837.

Psen clongatus PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 400, 1867.
(Male only.)

Very similar to *niger*, distinguishable only as noted above and in the key.

Recorded from Virginia, Illinois, and New Hampshire. Before me there are specimens from the following localities: Washington, D.C., May 23 (C. L. Marlatt); Georgetown, D.C., no date (H. H. Smith); Great Falls, Va., no date (H. H. Smith); and Glen Echo, Md., May 26, 1923, and June 18, 1922 (J. R. Malloch).

A female from Slave Lake, Alberta, Canada, taken on August 14, 1924, by Owen Bryant, has the tarsi darker than the specimen from the United States but does not differ in any other material respect.

The specimens are from the United States National Museum and Bureau of Biological Survey collections.

PSEN (MIMUMESA) MIXTUS Fox

Psen mixtus Fox, Trans. Amer. Ent. Soc., vol. 25, p. 7, 1898.

Psen alticola VIERECK, Trans. Amer. Ent. Soc., vol. 29, p. 66, 1903.

Psen similis ROHWER, Proc. Ent. Soc. Washington, vol. 12, p. 101, 1910.

I have before me a female specimen that was compared by Mr. Rohwer with the types of *mixtus* and *alticola* and found to agree with both, which appears to establish the synonymy as far as these two names are concerned. The synonymy of the third species is based upon a careful examination of the male type of *similis* in the National Museum, and except for the usual sexual differences it appears certain that it is the same as the two just listed. The transverse striation of the upper part of the back of head behind the ocelli is distinctive, but the antennae in the type specimen of *similis* are broken off, the portion of the single flagellum remaining being so badly immersed in the glue with which it is attached to the card that it is not possible to determine the structure of the segments.

Length, 7–8 mm.

Apparently a western species, the recorded localities being Washington State, Moscow, Idaho, Mount Hood, Oreg., and California. The four specimens before me are from the following localities: Florissant, Colo., type male of *similis*; Fort Collins, Colo.; Laggan, Alberta, Canada, June 12, 1928 (O. Bryant); Kaslo, British Columbia, June 13 (R. P. Currie); Canada, no definite locality (Baker collection).

PSEN (MIMUMESA) PROPINQUUS Kincaid

Psen propinquus KINCAID, Proc. Washington Acad. Sci., vol. 2, p. 508, 1900.

This species, of which I have examined the type specimen (no. 5314) in the National Museum, is very similar to *leucopus*, the male being distinguished mainly on the characters cited in the key. The Museum collection contains a female named by Rohwer which is in rather poor condition, the antennae being entirely missing and the face coated with some sort of sticky substance. Fresh material from Alaska that may belong here shows the character of the pygidium cited in the key and suggests the probability that this is the true female of the species.

Length, 8–9 mm.

Type locality, Fox Point, Alaska; female, Port Chester, Alaska (Wickham).

Other localities: Fairbanks and Anchorage, Alaska (J. M. Aldrich).

PSEN (MIMUMESA) MELLIPES Say

PLATE 1, FIGURE 10

Psen mellipes SAY, Boston Journ. Nat. Hist., vol. 1, p. 369, 1837.

This species and the next one are distinguished from the four that have preceded them in this paper by the yellow underside of the antennal flagellum, which is least conspicuous in the male of *canadensis*. The very noticeable distinction between the black apical segment of the flagellum and the preceding segments in the male is a reliable distinguishing character for the species in that sex, and the underside of the flagellum in the female is more broadly yellow than in any other species of the subgenus except *johnsoni*, but in the latter the yellow color is confined to the basal half of the flagellum. The tibiae in the female are not entirely yellow, even the fore pair being sometimes partly darkened, and the hind pair are usually mostly black. The peculiar swellings of the intermediate segments of the antennal flagellum in the male readily distinguish the species from *canadensis*, and the most distinctly elevated of these are much darker than the remainder of the segments upon which they are situated.

Length, 6–7.5 mm.

Originally described from Indiana, and recorded from New York by Fox. I have before me specimens from the following localities: Columbus, Ohio, July 15, 1921 (A. E. Miller); Ames, Iowa, July 15, 1926, and August 4, 1927 (G. O. Hendrickson); 8 miles southeast of Britt, Iowa, August 9, 1928 (G. O. Hendrickson); Funkstown, Md., August 3, 1916, Cage 832 (P. R. Myers); Anacostia, D.C., August 9, 1914 (W. D. Appel).

PSEN (MIMUMESA) CANADENSIS, new species

Male and female.—Similar in general characters to *mellipes*, distinguished in the male by the color and structure of the antennal flagellum and in the female by the slight but distinct emargination of the central production of the clypeus, and the much darker tibiae, which are usually all black. Both species have the petiole of the abdomen with the central carina rather poorly developed and the basal half of it with 2 or 3 irregular impressed lines, which are largely waved.

The pygidium in the females of both species is much broader than in the *niger* group, being similar to that of *clypeatus*, the surface covered with quite deep and closely placed piliferous punctures, so that it appears entirely dull. This last is generally considered as a group character, but other features appear to link the two species with the present subgenus despite the lack of a well-defined

sulcate dorsocentral carina on the abdominal petiole. The carina between the antennae is complete, and the section of the mesopleura above the episternauli is glossy and without definite sculpture, while the episternauli is well developed.

Length, 6.5–7.5 mm.

Type (U.S.N.M. No. 44210), male (no. 2416); allotype (no. 2021), and five paratypes, from Canada, without more definite locality (C. F. Baker collection).

PSEN (MIMUMESA) STRIATUS (Viereck)

Mimesa striatus VIERECK, Trans. Amer. Ent. Soc., vol. 27, p. 339, 1901.

This species and the two dealt with subsequent to it in this subgenus are distinguished from their allies by the presence of longitudinal closely placed fine striae on the greater portion of the mesonotum. I have segregated the three upon rather minute characters but believe they are distinct, the present one being accepted as the one described by Viereck because it fits the description better than either of the other two. Viereck, however, apparently had at least one specimen of *longicornis* before him, as he stated in a paragraph under the description that he had seen a specimen labeled Florida, which, judging from the description, ought to have been *longicornis* instead of *striatus*.

I have seen one damaged female of *striatus*, from Cape May, N.J., the single male before me being from Chesapeake Beach, Md., July 2, 1924 (J. R. Malloch).

PSEN (MIMUMESA) LONGICORNIS Fox

Psen longicornis Fox, Trans. Amer. Ent. Soc., vol. 25, p. 8, 1898.

Psen floridana ROHWER, Proc. Ent. Soc. Washington, vol. 12, p. 102, 1910.

This species is very similar to *striatus* as accepted above, differing mainly as indicated in the key. Fox's type was from Florida, and apparently like the type of *floridana* Rohwer, and a male bearing the name *albitarsis* Ashmead in the National Museum; all three were taken in that State by Mrs. A. T. Slosson. Ashmead did not apparently describe his species, and the female type of *floridana* bore also a manuscript name, *floridana*, by that authority when it was described by Rohwer.

I place with the above two three females, from Alexandria, La., May 22, 1908 (F. C. Bishopp); 10 miles southwest of Kelso, Iowa, July 30, 1928, and Yemassee, S.C., September 30, 1926, that agree in every respect with the one standing as *floridana*.

This is apparently a southern species.

PSEN (MIMUMESA) BERMUDENSIS, new species

Male and female.—Similar in structure and general coloration to *longicornis* and *striatus*, differing essentially only as indicated in the key. The pygidium of this and the next species above is shining, almost without shagreening, broader than in the *niger* group but not so broad as in *canadensis*, and has numerous large piliferous punctures, which are rather more dense along the sides than in *niger*, but not so much segregated into lateral series as in that species. The petiole of the abdomen is very similar in all three species, with a dorsocentral carina which is sulcate on practically its entire length, the length of the petiole being at least equal to that of the hind trochanter and femur combined.

Length, 7–8 mm.

Type (U.S.N.M. No. 44211), male, allotype, and three male paratypes, from Bermuda, West Indies, May 3, 1909 (F. M. Jones); 2 female and 1 male paratype, Spanish Point, Bermuda, July 5, 1910 (R. Spalth).

PSEN (MIMUMESA) CLYPEATUS Fox

PLATE 1, FIGURES 7, 8

Psen clypeatus Fox, Trans. Amer. Ent. Soc., vol. 25, p. 15, 1898.

A rather aberrant species in this subgenus, being the only one in which there is any distinct red color on the abdomen, and having the pygidium of the female similar to that of *canadensis*.

The head behind the ocelli is microscopically transversely punctato-striate, the mesonotum has a large part of the disk with rather deep punctures, which are in part situated in slight striae, and the petiole of the abdomen has a distinct tapered dorsocentral carina, which is shallowly sulcate. The female has the pygidium of the same form as in *canadensis*, which incidentally is the typical form in the next subgenus. The petiole is about as long as the hind femur.

Length, 6–7.5 mm.

Originally described from Nevada and Colorado. Before me there are specimens from the following localities: Colorado, compared with type by Rohwer; mouth of Bear River, Utah; Redlands, Calif.; and California without other data. One female taken from the stomach of a toad from California shows the two submedian apical teeth of the clypeus more distinctly than usual.

A remarkable specimen in which the petiole of the abdomen is very short, flat above, with divergent striae on that surface, and widened apically, is apparently an abnormality, as there is a rather deep impression on the first tergite, which indicates that some injury has affected it in the pupal stage. This specimen is from the mouth of Bear River, Utah (Wetmore).

In addition to the above material, I have seen two specimens from Idaho, one taken at Twin Falls, and the other at Castleford, in connection with the beet insect investigations.

PSEN (MIMUMESA?) CHALCIFRONS Packard

Psen chalcifrons PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 401, 1867.

I have not seen this species, which was described from a single female specimen from Illinois. It appears to me highly probable that it is the same as *striatus*; it at least is very closely similar to it. The description of the color of the legs in almost every respect agrees with that of *longicornis*, but without access to the type it is impossible to decide the exact status of the species.

Mr. Rohwer has examined the type specimen and reports that it belongs to the same group as *cressoni*, in which case it is very close to *nigrescens* Rohwer, which see.

PSEN (MIMUMESA) MODESTUS Rohwer

PLATE 1, FIGURE 11

Psen (Mimesa) modesta ROHWER, Proc. U.S. Nat. Mus., vol. 49, p. 244, 1915.
(Female.)

This species, described from the female, is represented by three specimens in the National Museum collection and a careful examination of these discloses the fact that it belongs to this subgenus, and to the group in which the mesonotum is distinctly longitudinally striate. In my key above it will run down to "7." From all three species of the group it differs in having the dorsocentral carina of the petiole with a longitudinal sulcus on only the basal half or less of its extent. The antennal flagellum is black, with a quite evident raised shining line on one side of segments 2 to 8, and rarely a much less evident short shining elevation on segment 9. The enclosure of the propodeum has the central glossy diamond-shaped depression (pl. 1, fig. 11) that is typical of *longicornis* and *bermudensis* and which distinguishes it from *striatus* as accepted herein.

I believe the species is distinct from the other three with which the striate mesonotum links it but do not include it in my key because it is not North American.

Length, 7 mm.

Type.—U.S.N.M. No. 15081, from Mayaguez, Puerto Rico.

A male specimen in the National Museum from Trinidad agrees in every particular with the type material, even to the large glossy central diamond-shaped part of the propodeal enclosure, the only difference being that the antennal flagellum is not so dark, the general color dark brown or fuscous and not noticeably yellow below.

Locality.—Caroni River, Trinidad, October 12, 1916, A. 757 (H. Morrison).

PSEN (MIMUMESA) MODESTUS RETICULATUS, new variety

PLATE 1, FIGURE 12

Male.—Differs from the above in having the antennae brownish yellow below on almost the entire flagellum, and the propodeum with almost the entire surface rugoso-reticulate (pl. 1, fig. 12).

Type.—U.S.N.M. No. 44231, from Caroni River, Trinidad, October 12, 1916, A. 757 (H. Morrison).

PSEN (MIMUMESA) COLORADOENSIS Cameron

Psen coloradoensis CAMERON, Trans. Amer. Ent. Soc., vol. 34, p. 232, 1908. (Female.)

It appears to me certain that this species, the exact identity of which I am unable to arrive at, belongs to this subgenus, as the describer stated that it would fall in Fox's group 2, and runs near *cylindricus* and *regularis*.

Judging from the description, it falls in the same group with *niger*, *mixtus*, and *leucopus*, with a possibility that it may be the second species.

Locality.—Berkeley County, Colo. (= Berkeley, Calif.?).

PSEN (MIMUMESA) INTERSTITIALIS Cameron

Psen interstitialis CAMERON, Trans. Amer. Ent. Soc., vol. 34, p. 233, 1908. (Male.)

Cameron rejected the idea that this might be the male of *coloradoensis* owing to the interstitial second recurrent and cubital nerves, the lack of a distinct frontal keel, and the shorter abdominal petiole.

As there is a great deal of variation in the positions of the cubital and the recurrent nervures, I am not inclined to consider the character of importance in the distinction of species. The lack of a frontal keel would appear to suggest that the species does not belong to this subgenus, but the observation may not have been accurate, and there is some variation in the length of the abdominal petiole in many species of the subfamily, especially in the sexes of certain species. It is impossible to decide what this species really is without examination of the type.

Locality.—New Mexico, no definite location.

The types of both the above species were in the Cameron collection, which is, I believe, in the British Museum of Natural History in London.

Subgenus MIMESA Shuckard

Reference as under genus, p. 6.

The two characters which can be depended upon invariably for the separation of members of this subgenus from the *Mimumesa* are the

lack of a complete carina from the anterior ocellus to below the level of the antennal insertions between the antennae and the presence of distinct sculpture on the upper portion of the mesopleura (eps 2), the latter being but indistinctly separated from the lower part (eps 1) by an impressed line (episternauli). Usually the petiole of the abdomen is rounded above, without lateromarginal sulci, and the female has the pygidium broader and more closely punctate than in typical members of the preceding group, though several of the species of the latter have similarly formed pygidia. Most of the species have the base of the abdomen red, but some are without this characteristic.

KEY TO THE SPECIES OF SUBGENUS MIMESA

1. Males ----- 2
 Females ----- 17
2. Abdomen red on first and second tergites beyond petiole----- 3
 Abdomen not distinctly red at base, sometimes with apices of tergites yellowish brown, or testaceous----- 26
3. Segments 2 to 5 of antennal flagellum each with an angular elevation on one side, the highest point of which is at middle of segment, most evident when segment is viewed crosswise, flagellum distinctly thickened to apex and bright fulvous-yellow on entire underside; hind coxae with a sharp carina on almost the entire inner side; propodeum (pl. 1, fig. 13) with enclosure not very well marked, furnished with fine striae that diverge slightly on each side, adjacent portions with much finer and more closely placed striae that are sometimes almost obliterated on apical curve on each side; petiole rarely less than length of femur and trochanter combined, rounded above, with a fine carina on each side of ventral surface, and above the carina a slight sulcus on each side---- **cressoni** (Packard)
 Antennal flagellum with much less evident, or no, elevations on second to fifth segments, rarely as conspicuously yellow below or as distinctly thickened apically, and when almost so then without evident elevation; hind coxae with at most a short carina on basal half or less of inner side, usually merely rounded; petiole of abdomen in species with flagellar elevations not so long as hind femur; propodeum either with coarser sculpture or if almost similar then hind coxal carinae are lacking---- 4
4. Legs and antennae entirely testaceous-yellow----- **cingulatus** (Packard)
 Legs and antennae at least partly black or very dark brown----- 5
5. Upper part of mesopleura (eps 2) so closely and finely punctured that it appears to be granulose and without a distinct gloss; lower part (eps 1) densely shagreened and dull, with moderate-sized close punctures; flagellar segments 2 to 5 or 6 slightly and evenly rounded when seen in profile, the highest point at or close to the middle of each; propodeum with areas laterad of enclosure finely striate, surface granular so that striae are almost invisible except under a very high magnification, sculpture becoming reticulate at curve; petiole subequal in length to remainder of first segment-----**proximus** (Cresson)
 Upper part of mesopleura (eps 2) longitudinally striate or striato-punctate, sometimes finely so, and like the lower part (eps 1) generally more or less conspicuously shining; other characters not as above in their entirety----- 6

6. Propodeum with areas immediately laterad of enclosure broadly smooth and glossy, the smooth part extending to, or almost to, curve; antennal flagellum yellow, narrowly browned above, clubbed much as in *cressoni*, but with no evident sensory elevations on any of the segments; eps 2 with very fine and irregular longitudinal striae, which are most noticeable posteriorly, surface shining but obscured by dense closely appressed silvery white hairs-----*politus*, new species
Propodeum with quite distinguishable sculpture immediately laterad of enclosure----- 7
7. Antennal flagellum with not more than apical six segments bright orange-yellow below----- 8
Antennal flagellum bright orange-yellow on entire length of underside or with only basal segment blackened below----- 9
8. Petiole of abdomen flattened above, sometimes shallowly grooved along median line; basal segments of flagellum hardly longer than second, sensory areas very broad, slightly shining, and not sharply differentiated from remainder of segments 2 to 7; clypeus with a quite deep V-shaped central notch-----*basirufus* (Packard)
Petiole of abdomen convex above, with a slight depressed line along each lateral edge; basal segment of flagellum about 1.33 as long as second, sensory areas almost linear, not extending entire length of segment and quite sharply elevated and differentiated; clypeus with a rather shallow rounded central emargination-----*unicinctus* (Cresson)
9. Large species, not less than 10 mm in length; male with a slight but evident raised line on each side of disk of apical tergite on its apical fourth or less which simulate the pygidial lateral carinae of female (pl. 1, fig. 14); antennal flagellum clubbed at apex, basal segment about 1.5 as long as second, preapical segment not so long as wide, and no segment with distinct raised sensory area-----*pygidialis*, new species
Smaller species, not more than 8 mm in length; apical tergite without raised lines----- 10
10. Pronotum with a spikelike production of each lateral angle; hind coxae rather sharply carinate on at least the basal half or their inner or opposed surfaces; petiole distinctly longer than swollen part of first segment; apex of first, all of second, and at least the basal half of third tergite red----- 11
Pronotum rounded or merely angulate on each lateral angle----- 13
11. Interocellar region with closely placed punctures, whole width of front behind ocelli finely transversely striate and with similar punctures to those on interocellar region, the part immediately behind space between posterior ocelli as densely punctured as remainder and not at all tumid; mesonotum with no trace of shagreening on disk except faintly in front-----*punctifrons*, new species
Interocellar region not evenly punctured, the region behind it quite markedly tumid, and surface not transversely striate; mesonotum with very distinct shagreening----- 12
12. Fore and mid tibiae fulvous-yellow; dorsolateral sulci of petiole undeveloped-----*edentatus*, new species
Fore and mid tibiae largely dark brown; dorsolateral sulci of petiole distinct-----*impressifrons*, new species
13. First, second, and third tergites of abdomen entirely red; propodeum finely rugoso-reticulate, enclosure appearing granulose except under a very high power lens (pl. 1, fig. 15); petiole a little shorter than swollen part of

first segment, the latter more abruptly elevated in front than usual (pl. 1, fig. 16); flagellum slightly clubbed, penultimate segment longer than thick----- *arizonensis*, new species

At least a part of first tergite black or dark brown; propodeum rarely as finely sculptured, at least in enclosure; first tergite not so abruptly elevated in front----- 14

14. Petiole of abdomen almost, or quite, as long as hind femur and not less than 1.5 as long as swollen part of first segment when viewed from above (pl. 1, fig. 17); propodeum rugoso-reticulate alongside enclosure- 15

Petiole of abdomen shorter than hind femur and not noticeably longer than swollen part of first segment when viewed from above (pl. 1, fig. 18)-- 16

15. Antennal flagellum noticeably longer than head and thorax, not much swollen apically, penultimate segment distinctly longer than thick, with a rather sharp linear elevation on one side of each segment from second to fifth inclusive, which lies within margin of black part; head behind ocelli with microscopic transverse striae; petiole narrowly slightly and evenly convex on entire dorsal surface and without a sulcus close to each laterodorsal edge----- *argentifrons* (Cresson)

Antennal flagellum shorter, more definitely swollen apically, penultimate segment about as thick as long, with a broader and less evidently elevated area on each segment from second to fourth, less obvious on fifth, which is paler in color and lies on edge of yellow part; head behind ocelli without transverse striae; petiole narrowly convex on middle line and with a shallow piliferous sulcus along each laterodorsal edge----- *borealis* (Smith)

16. Propodeum finely sculptured, areas laterad of enclosure with numerous fine striae, enclosure finely rugoso-reticulate much as in *arizonensis*.
gregarius Fox

Propodeum coarsely rugoso-reticulate, areas laterad of enclosure with much coarser striae, sometimes reticulate almost up to edge of enclosure.
pauper (Packard)

17. Abdomen entirely without red basal markings, apices of some of tergites more or less evidently brownish yellow----- *maculipes* Fox

Abdomen with at least a part of second tergite distinctly red on disk---- 18

18. Abdomen with only petiole of first segment black, swollen part of tergite, and at least second and third tergites red----- 19

Abdomen with petiole and at least a large part of swollen part of segment black ----- 22

19. Propodeum with areas contiguous to enclosure broadly glossy and without a trace of sculpture----- *politus*, new species

Propodeum always with more or less definite sculpture on areas laterad of enclosure, sometimes rather fine contiguous to it----- 20

20. Propodeum finely longitudinally striate, enclosure a little more coarsely so than contiguous areas, latter in exceptional cases almost without striae close to edges of enclosure and becoming progressively more evidently striate toward lateral curves and over latter; hind coxae with a distinct fine carinate line on inner or opposed sides; petiole of abdomen slender, usually at least as long as hind femur, slightly widened at apex, where it is about one sixth as wide as its length, convex and not sharply margined on each side above, the laterodorsal sulci practically lacking; face not wider at lower edge of the antennal insertions than long in center; petiole black to apex below----- *cressoni* (Packard)

- Propodeum rugoso-reticulate, definitely longitudinally striate basally in enclosure and immediately against it for a short distance outwardly; hind coxae not distinctly carinate on inner sides; petiole of abdomen rather thick, laterodorsal edges sharp, sides slightly hollowed out and lateroventral edge quite sharp; face fully as wide at lower edge of antennal insertions as long in center; apex of petiole red below----- 21
21. Petiole with a quite evident broad carina or central longitudinal convexity on its entire dorsal length; basal segment of antennal flagellum almost as long as next two segments combined----- *pygidialis*, new species
Petiole flat, or almost so, on dorsum; basal segment of antennal flagellum distinctly shorter than next two combined----- *basirufus* (Packard)
22. Upper portion of mesopleura (eps 2) closely granular or reticulate, very minutely striate posteriorly, appearing entirely dull; a portion of first, all of second and third, and all or most of fourth tergite red; petiole of abdomen about half as long as hind femur; clypeus as in plate 1, figure 19, without preapical elevation----- *proximus* (Cresson)
Upper portion of mesopleura (eps 2) more or less glossy, longitudinally striate or rugoso-reticulate; if feebly sculptured the other characters are not as above----- 23
23. Clypeus with a rather prominent small elevation in center near apical margin, the latter as in plate 1, figure 20, in structure; eps 2 shining and almost without sculpture; propodeum with fine striae, which extend from base of enclosure divergently on each side to lateral curves; apex of first tergite, all of second and third, red---- *coquilletti* Rohwer (= *granulosus* Fox?)
Clypeus not as above in structure, if with a preapical elevation it is not so high, and much longer, and apical margin is not as figured; eps 2 with well-developed sculpture, generally rather strongly longitudinally striate----- 24
24. Small species, averaging about 7 mm in length, with only apex of first and all of second tergite red; propodeum rather coarsely sculptured, enclosure with rather large rugose reticulations----- *pauper* (Packard)
Larger species, averaging 8 mm or more in length, with apex of first, all of second, and all, or a large part of, third tergite red----- 25
25. Propodeum finely sculptured, lateral areas contiguous to enclosure very finely striate----- *unicinctus* (Cresson)
Propodeum more coarsely sculptured, lateral areas contiguous to enclosure rugoso-reticulate almost up to edge of latter----- *borealis* (Smith)
26. Sternites 1 to 3 beyond petiole subequal in length, all more than twice as long on their median line as wide at base; pronotum entirely rounded at lateral angles; enclosure of propodeum with small fine rugose reticulations, contiguous lateral areas finely rugose, becoming reticulate at downward curve; wings whitish hyaline----- *granulosus* Fox
Sternites not as above, 1 much longer than either 2 or 3, the last mentioned two not nearly twice as long on median line as their width at base; pronotum with well-developed lateral angles; propodeum not as above; wings grayish or brownish hyaline----- 27
27. Flagellar segments 2 to 5 or 6 each with a papillalike elevation on one side close to middle; enclosure of propodeum with fine parallel longitudinal striae, contiguous lateral areas with similar but finer and divergent striae that become coarser toward downward curves; petiole of abdomen fully as long as hind femur, slender and evenly convex above; width of face at lower edge of antennal insertions not so great as length from there to apex of clypeus in center----- *cressoni* (Packard)

Flagellar segments 2 to 6 each with a slight linear elevation on one side extending almost entire length of segment, which is but faintly visible in profile ($\times 34$); propodeum much more coarsely sculptured, rugoso-reticulate on at least the areas adjacent to enclosure; petiole of abdomen rather thick and not nearly so long as hind femur; face at lower level of antennal insertions a little wider than its length in center----- maculipes Fox

PSEN (MIMESA) CRESSONI (Packard)

PLATE 1, FIGURES 13, 21

Mimesa cressoni PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 405, 1867. (Female.)

Mimesa denticulata PACKARD, Idem, p. 406. (Male.)

Psen cressoni Fox, Trans. Amer. Ent. Soc., vol. 25, p. 12, 1898. (Male and female.)

This species is very readily distinguished from its allies by the characters given in the key. The broadly yellowish testaceous under side of the antennal flagellum in both sexes, with the distinct clubbing, and the subangular median elevation on one side of the second to fifth or sixth segments in the male, the very fine divergent striae of the propodeum, particularly on the curve outside of the enclosure, the long dorsally rounded parallel-sided petiole, and the sharply carinate line on the inner side of each hind coxa combine to separate it from any other species of the subgenus. The entire sides of the propodeum are almost smooth, at most granulose, and the width of the face at lower level of the antennal insertions is not so great as its length from there to the lower level of the center of clypeus. This last character is distinctive, all the other species having the width of the face at lower level of the antennal insertions about equal to the central length. The head is also higher as compared with its width in *cressoni* than in any other species, the two being about equal, while in other species the width generally exceeds the height. Hypopygium of male as in plate 1, figure 21.

Length, 6–8.5 mm.

Recorded from the following States: New Jersey, Delaware, Illinois, Colorado, and Montana. Represented in material before from Washington, D.C.; Falls Church, Va.; Beltsville, Md.; and from Kansas, Nebraska, Iowa, Indiana, Washington, Idaho, Alabama, New Hampshire, and Missouri. A series of rather small specimens from Canada in the Baker collection.

PSEN (MIMESA) CRESSONI ATRIVENTRIS, new variety

This variety differs from the typical one in having the abdomen black, with a slight reddish tinge on sides of the second segment.

Type.—U.S.N.M. No. 44212, from Canada, no other data (no. 2068, Baker collection).

PSEN (MIMESA) UNICINCTUS (Cresson)

Mimesa unicinctus CRESSON, Proc. Ent. Soc. Philadelphia, vol. 4, p. 488, 1865.
(Male, not female.)

This species shows a sexual color dimorphism, the male having only the apex of the first tergite and all of the second red, while the female has in addition the greater portion of the third also red. The antennal flagellum of the males has only the apical 5 or 6 segments distinctly yellow below, the pale color fading out about the middle, in which character it closely resembles the male of *basirufus*. The petiole of the abdomen is, however, narrower and slightly longer than in that species and is distinctly convex above and without a sharp lateroventral edge so that the side is not distinctly sulcate. The sculpture of the propodeum is also less coarse, the areas adjacent to the enclosure being rather finely striate and almost without reticulations.

Length, 6–8 mm.

The species was originally described from Colorado, and all the specimens now available to me, including both sexes, are from that State.

PSEN (MIMESA) BASIRUFUS (Packard)

Mimesa basirufa PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 406, 1867.
(Female.)

? *Mimesa nebrascensis* SMITH, Univ. Nebraska Studies, no. 8, p. 390, 1908.

This species, as already noted, is very similar in the male sex to *unicinctus*, but the female is more readily distinguished on the basis of the apically widened and dorsally flattened petiole of the abdomen, which is usually depressed in center above and occasionally has a slight central sulcus or channel on almost the entire length. In the only female of *unicinctus* I have seen the first tergite of the abdomen is broadly blackened on disk, while in all the females of *basirufus* I have, this tergite is entirely red, as is also the extreme apex of the petiole below.

Length, 7–9 mm.

Described from Maine and subsequently recorded from Washington, Oregon, Nevada, Arizona, Colorado, Montana, and British Columbia. I have seen it from Maine, New Mexico, South Dakota, Colorado, and British Columbia.

PSEN (MIMESA) PROXIMUS (Cresson)

PLATE 1, FIGURE 19

Mimesa proxima CRESSON, Proc. Ent. Soc. Philadelphia, vol. 4, p. 488, 1865.
(Female.)

This species is another in which the petiole of the abdomen is much shorter than the hind femur. The dorsal surface of the petiole has

a distinct central convex area on its entire extent which is variable in width, but there is always a sulcus close to the lateral edge on each side in which there are numerous fine short hairs; the length of the petiole in the female is hardly more than half that of the hind femur, while in the male it is about two thirds as long as the femur and slenderer than in the female, the general structure being similar to that of *unicinctus*, the lateroventral edge almost rounded. A very striking character of the species is the finely undulate striate sculpture of the upper portion of the mesopleura (eps 2), which causes it to appear dull in both sexes, the two preceding species having the sculpture coarser, consisting of almost straight longitudinal striae and the surface is distinctly shining. The propodeum has the enclosure very poorly outlined, with almost straight fine striae, which are somewhat reticulated centrally at apex, and the adjacent areas outside of the enclosure are finely longitudinally striate, very much as in *cressoni* though a little more noticeably reticulate at the lateral curve. The male has the antennal flagellum more clubbed than in *unicinctus*, pale on the entire underside, and the second to sixth segments are raised on one side, though evenly and roundly so, with the highest point at middle. The female has the apex of the first tergite, all of second and third, and all or most of fourth red, but the male has only the apex of first and all of second and third red.

Length, 6.5–8 mm.

Described from Colorado and since recorded from Nebraska. The material before me is from Colorado and Springer, N.Mex.

I know of no previous record of the recognition of the male of the species.

PSEN (MIMESA) GRANULOSUS Fox

Psen granulatus Fox, Trans. Amer. Ent. Soc., vol. 25, p. 15, 1898.

This is one of the most readily recognizable of the species described by Fox, the entire black abdomen of the male being of a peculiar elongate form with the apex pointed and the anterior margin of the two sternites immediately beyond the petiole much narrower than usual, that of the second being not more than one third as wide as its length at center. The petiole is subequal in length to the dilated part of the first tergite, convex above and with a shallow piliferous sulcus along each side, the lateroventral edges sharp, subcarinate, and the sides shallowly sulcate. The front of the head is closely covered with small deep punctures, the face below the antennal insertions is about as wide as its length in center, the clypeus has a slight central notch, the mandibles are almost entirely black, the antennal flagellum is testaceous-yellow, narrowly dark brown above, distinctly clubbed at apex, the penultimate and antepenultimate segments not so long on their lower edge as they are thick, and the basal segments without

evident raised line on one side. The propodeum under a moderate magnification ($\times 20$) appears granulose and dull, under a high magnification ($\times 32$) the enclosure is seen to be covered with small reticulations or rugae, while the adjacent areas outside of it are more striate, becoming reticulate near the downward curve. Pronotum very broadly rounded on each side, practically without the usual lateral angle. Upper mesopleura (eps 2) granulose. Legs black, the bases and apices of all tibiae and most of the fore and mid tarsi brownish yellow. Wings more noticeably whitish hyaline than in any other species, the costal vein up to the stigma yellow, the other veins black. Hind coxae sharply carinate on inner side.

Length, 7.5 mm.

Originally described from Montana. The male before me is from Tuttle, Idaho, July 1, 1930, no. 9, *S. pestifer*.

PSEN (MIMESA) COQUILLETTI Rohwer

PLATE 1, FIGURE 20

Psen (Mimesa) coquilletti ROHWER, Proc. Ent. Soc. Washington, vol. 12, p. 103, 1910. (Female.)

Female.—Similar to *granulosus*, of which I am practically certain it will prove to be the female. Legs almost entirely black, the hind pair entirely so, with white hairs, spines, and spurs. Abdomen with the extreme apex of first and all of second and third tergites red. Wings white, the costal vein much paler than the radius.

Structurally similar to *granulosus*, differing strikingly in the structure of the clypeus, the anterior aspect of which is shown in plate 1, figure 20. That there should be a very prominent elevation near the anterior margin in center which is not evident in the male is a normal feature of the sexual dimorphism of the subgenus, though in this species the elevation is much more prominently developed than in any other species now before me, and the submedian teeth are also better developed. The other structures are very similar to those of the foregoing male, except that the petiole is rather shorter and the sternites are of the usual width on anterior margin.

Length, 8 mm.

Originally described from a female taken in San Diego County, Calif. I have a female that agrees in all details with the type from Glendale, Nev., October 3, 1929, on *Chrysothamnus paniculatus*, no. 1119, B-29 (David E. Fox).

The male which the describer associated with the type does not, I am sure, belong here, as the upper mesopleura (eps 2) is finely but distinctly longitudinally striate instead of merely alutaceous and slightly punctured, as in the female and in *granulosus*. In all three the hind coxae are rather distinctly carinate on their inner surfaces.

The wings in the males placed with the type of *coquilletti* are not white but yellowish hyaline, and the costal vein is not paler than the radial vein except at extreme base.

I leave these male specimens without a definite name but consider that they belong to a species unknown to me in the female sex.

Locality, Los Angeles County, Calif. (Coquillett).

PSEN (MIMESA) POLITUS, new species

Male and female.—Shining black, underside of antennal flagellum broadly yellow, facial hairs silvery white, the pleura so densely covered with short silvery hairs that they practically obscure the sculpture on most of the upper portions of the mesopleura; abdomen in male with apex of first, all of second, and anterior half or more of third tergite red, that of female with all of first to third tergites red; coxae, femora, and apical two thirds of hind tibiae blackened, remainder fulvous-yellow; wings whitish hyaline, veins and stigma fuscous, base of latter and most of costal vein up to stigma yellowish.

Male.—Slender, the abdomen about 1.5 as long as head and thorax combined. Antennal flagellum distinctly clubbed, penultimate and antepenultimate segments about as thick as long, no segments with distinct sensory elevations; front glossy, with small isolated punctures; ocelli quite large, the distance between the hind pair greater than that of either from eye; interantennal elevation slight, without an upwardly continued ridge; clypeus with a small, moderately deep rounded central excision in anterior margin; head broader than high. Mesonotum and scutellum glossy, with rather small deep isolated punctures; mesopleura glossy, eps 2 with very fine and rather irregular longitudinal striae; propodeum with the enclosure poorly differentiated, the sculpture consisting of fine longitudinal striae which are eliminated just beyond the margin of the enclosure so that there is a rather large bare, slightly alutaceous area on each side that extends almost to the curve, where the striae begin again but so faintly that the posterior face appears to be merely granulose. Petiole a little shorter than hind femur and about 1.5 as long as the swollen part of the first segment, longitudinally convex above and with the laterodorsal carina very poorly developed, the lateroventral one only partially present. Legs and wings normal, second cubital cell little narrowed above.

Female.—Differs from the male as usual in having the puncturation of the front much weaker, almost lacking, and the clypeus with the anterior margin rounded, the preapical elevation quite small and prominent. This last feature is usually a female character, as it is in this species, but more generally the elevation is more transverse, forming a slightly raised and rather poorly margined ridge that extends across about one third of the width of the clypeus.

Propodeum with the areas laterad of the enclosure even more shiny than in the male because of the lack of shagreening. Pygidium about twice as long as wide.

Length, 9 mm.

Type.—U.S.N.M. No. 44213, male, one half mile west of Thoreau, N.Mex., July 24, 1929, on *Salsola pestifer*, lot 5823, no collector's name; allotype, Meadow Grove, Nebr., July 18, 1929 (C. N. Ainslie).

This is the only species of the genus known to me in which the propodeum is entirely without definite sculpture on the areas contiguous with the enclosure.

PSEN (MIMESA) ARIZONENSIS, new species

PLATE 1, FIGURES 15, 16

Male.—Readily distinguishable from most of its allies by the entirely red first, second, and third abdominal tergites. The antennal flagellum is brown above and broadly yellow below, the scape is black, and the hairs of the face are silvery white. The coxae and femora are black, the tibiae dull yellow and broadly browned apically, and the hind tarsi are dull brownish yellow, with the apices of the segments paler. Stigma dark brown, paler at extreme base.

Flagellum but slightly thickened apically, the penultimate segment longer than thick, none of the segments with well-developed elevations; clypeus slightly produced centrally and with a very narrow median notch; front quite closely punctured and with fine shagreening, a slight impressed line across behind the posterior ocelli. Mesonotum with moderate punctures and slightly alutaceous, the scutellum more shining and sparsely punctured; propodeum with the enclosure poorly defined and closely reticulated (pl. 1, fig. 15), the lateral areas striate to curve. Petiole of abdomen a little shorter than swollen part of the segment and not so long as hind femur, convex above, the laterodorsal edges not definitely carinate, the lateroventral edges partly carinate. Legs and wings normal.

Length, 8 mm.

Type.—U.S.N.M. No. 44214, from Tucson, Ariz., on *Bigelovia hartwegi* (Towmey).

PSEN (MIMESA) PUNCTIFRONS, new species

Male.—Face white haired; underside of antennal flagellum yellow on entire extent except base of first segment. Apex of first, all of second, and anterior two thirds or more of third tergite red. Legs black, fore and mid tibiae yellowish brown, becoming fuscous or black below; fore and mid tarsi brownish yellow, hind pair dark brown centrally, becoming black at base, and paler brown apically. Wings grayish, stigma dark brown to black.

Front with rather deep punctures, which are very dense except close to eyes on each side above, the postocellar region finely striato-punctate to or slightly below curve, not tumid centrally; carina in front of anterior ocellus almost obsolete; clypeus almost evenly rounded in center of apex; antennal flagellum slightly clubbed at apex, penultimate and antepenultimate segments distinctly longer than thick, entire length of flagellum distinctly greater than that of head and thorax combined. Pronotum with a spikelike lateral process at each angle; mesonotum and scutellum glossy, without distinguishable shagreening, and with fine sparse punctures; eps 2 shining, rather coarsely and irregularly longitudinally striate, eps 1 glossy, with a few fine striae above and almost without sculpture on disk, not shagreened; propodeum with the enclosure rather small, the sculpture within it consisting of quite closely placed wavy striae, the areas adjacent to the enclosure finely striate anteriorly, becoming more coarsely so posteriorly, and rugoso-reticulate slightly before curve. Petiole fully as long as hind femur and over 1.5 as long as swollen section of the segment, convex above, with slight laterodorsal sulci and the edge beyond these quite sharply carinate, the sides almost straight, the lateroventral edges carinate; abdomen slender than in the *pauper* group. Legs and wings normal.

Length, 7-8 mm.

Type (U.S.N.M. No. 44215) and one paratype male, Redlands, Calif. (F. R. Cole).

PSEN (MIMESA) EDENTATUS, new species

Male.—Similar in color and general structure to *punctifrons*, differing mainly in the characters cited in the foregoing key.

The antennae are a little more markedly clubbed than in *punctifrons*, and not so long, with the underside more broadly ochreous, and the penultimate and antepenultimate segments not noticeably longer than thick, and in addition the sensory areas are not so sharply linear, being more moundlike and shorter as well as pale in color and situated in the pale instead of the dark part of segments 2 to 5 or 6. The front is quite markedly humped up or tumid just behind the space between the posterior ocelli, but there is no transverse impressed line in front of the hump; the sides of front between the ocelli and eyes are less densely punctured than in the other species referred to and lack striae; the clypeus has a slight central emargination; and the mandibles are without a well-developed inner tooth near the apex. Mesonotum with very fine shagreening, alutaceous; propodeum with the enclosure larger than in *punctifrons*, the sculpture almost rugoso-reticulate and not very coarse, the

lateral areas finely but irregularly striate anteriorly, coarser apically and rugoso-reticulate at curves; eps 2 more finely and irregularly longitudinally striate than in the preceding, the lower parts, eps 1, distinctly alutaceous and rather closely punctured on disk. Petiole hardly as long as in *punctifrons*, with very faint indications of dorsolateral sulci, and the sides not so definitely vertical. Legs and wings normal.

Length, 8 mm.

Type.—U.S.N.M. No. 44216, from San Diego County, Calif., April (Coquillett).

PSEN (MIMESA) IMPRESSIFRONS, new species

Male.—Similar to *edentatus*, but the fore and mid tibiae are not entirely brownish yellow, the color being as in *punctifrons*.

There is a rather noticeable impressed line in front of the frontal tumid area between the posterior ocelli that is not evident in *edentatus*, and the mandibles have a short but quite evident preapical inner tooth. Petiole slightly longer than in *edentatus*, with quite distinct sulcus on each side above.

Length, 8 mm.

Type.—U.S.N.M. No. 44217, from Perry, Wash., August 27, 1922 (M. C. Lane).

Another specimen which has some of the features of this and the preceding two species, the pronotum having a very distinct angle though not toothed, differs from *punctifrons* in having the post-ocellar tumid area, and from both the other species in having the mesonotum glossy and without evident shagreening. The petiole of the abdomen is also shorter, in fact so much so that it would place the species in another group. I deem it unwise to describe the species from the single specimen available, though I am practically certain that it will prove distinct. The antennal flagellum has the segments 2 to 5 more elevated centrally when seen from the side than do any of the three species just dealt with.

Locality.—Hood River, Oreg., June 30, 1921 (C. C. Sperry).

In collection of the Bureau of Biological Survey.

PSEN (MIMESA) ARGENTIFRONS (Cresson)

PLATE 1, FIGURE 17

Mimesa argentifrons CRESSON, Proc. Ent. Soc. Philadelphia, vol. 5, p. 487, 1865.

I am not certain that the male which I accept as this species is correctly placed, but it agrees well with the description and is from Colorado, the type locality.

The salient characters for the identification of the male are given in the foregoing key, and there is little if anything to add thereto.

Length, 8 mm.

Locality.—Colorado, no other data (Baker collection).

PSEN (MIMESA) PYGIDIALIS, new species

PLATE 1, FIGURE 14; PLATE 2, FIGURE 22

Male and female.—Shining black, the abdomen in the male with the apex and lateral margins of first tergite and all the second and third tergites red, rarely with a dark mark on apex of latter, the female with entire first tergite and all the second and third tergites red, apices of the other tergites inconspicuously brown or yellowish brown. Face in male densely silvery haired, that of the female less densely white haired; underside of the antennal flagellum broadly testaceous-yellow except on basal segment. Legs black, apices of fore and mid femora in male rather conspicuously fulvous, all tibiae and tarsi in same sex fulvous, the hind tibiae generally browned centrally, and the hind tarsi largely fuscous; the pale color on the legs of the female much less, in the allotype present only on the anterior side of fore and apices of posterior side of hind tibiae, and to some extent on all tarsi, more preponderantly so on the fore pair. Wings grayish hyaline, veins and stigma dark brown.

Male.—Frons closely and finely punctured, most conspicuously so in front of the ocelli, least so laterad of the posterior ocelli, where it is rather glossy, the declivitous posterior part glossy and slightly granulose, not striate; space between the posterior ocelli greater than that between either and eye; lower part of back of head finely vertically striate; distance from eye to eye at lower level of antennal insertions a little greater than that from latter to apex of clypeus in center; face with dense appressed silvery white hairs; apex of clypeus with a central notch on each side of which there is a broadly rounded low lobe; antennal flagellum distinctly club-shaped, basal segment not so long as the next two combined, penultimate and antepenultimate segments not so long on underside as they are thick, second, third, and fourth segments each slightly elevated on one side, the elevation not evident except under a very high-power lens and neither highly polished nor distinguished in color. Mesonotum rather dull, microscopically shagreened or alutaceous, the punctures small and rather closely placed, scutellum not so closely punctured and more glossy; propodeum with the enclosure not very well marked and quite finely reticulate or rugose, the adjacent areas with slightly sinuous rugae, which become reticulations at the downward curve;

mesopleura finely punctured and distinctly shagreened, more definitely so posteriorly, the upper part (eps 2) longitudinally striate, but very finely so and with the white hairs so closely appressed that it is difficult to distinguish the sculpture. Abdomen exclusive of the petiole distinctly longer than head and thorax to apex of propodeum, the petiole subequal to the hind femur in length, with the dorsal surface convex in center and slightly sulcate along each side, the laterodorsal edges sharply carinate, lateroventral edges similarly formed and the sides slightly concave or sulcate; sixth tergite with a quite distinct raised line around apex and continued forward about one fourth of the length of the tergite so that there is quite a marked resemblance to the typical pygidium of the females of the genus. Legs normal, hind coxae elevated at bases on inner side, but not carinate. Wings normal.

Female.—Antennal flagellum narrower at base than in the male, the basal segment about as long as the next two combined on under-side. Face less densely haired, the clypeus without definite central emargination and with a narrow transverse ridge a little before apex in center; frons less shining on sides above and more regularly punctured over all. Upper part of mesopleura more coarsely longitudinally striate, the hairs less dense than in male; propodeum more coarsely rugoso-reticulate, especially outside of the enclosure. Petiole of the abdomen slightly shorter and thicker than in the male, similarly formed. Legs stronger than in male, the spinose armature also stronger, the series of yellow spines on the posterior side of the fore metatarsus quite noticeably stronger.

Length, 9.5–11 mm.

Type (U.S.N.M. No. 49906), male, allotype, and four male paratypes, Bilby, Alberta, Canada, June 28, 1924 (O. Bryant).

The quite striking resemblance of the sixth abdominal tergite of the male of this species to that of normal females, although the pygidium is not so well developed nor so extensive, readily distinguishes it from any other as yet known to me in the subfamily.

PSEN (MIMESA) BOREALIS (Smith)

Mimesa borealis SMITH, Catalogue of Hymenoptera in the British Museum, pt. 4, p. 431, 1856. (Male.)

This species is very similar to *pygidialis*, but is much smaller, the male has no raised lines on the apical tergite of the abdomen, the female has the first tergite largely blackened at base, and the petiole of the abdomen is shorter. The antennal flagellum of the male is comparatively longer than in that species, with the sensory elevations very slightly evident in profile, and pale. The propodeum is much coarser sculptured, the enclosure having well-developed raised lines

longitudinally, with some transverse lines centrally, which divide the central area leaving no conspicuous glossy central diamond-shaped space, and the entire posterior face is quite coarsely reticulate, which sculpture extends to or almost to the lateral edges of the enclosure.

Length, 7-9 mm.

Originally described from the male taken in the Hudson Bay Territory, and subsequently both sexes were described by Fox from the same region. I have before me both sexes from Bilby, Alberta, June 28 and July 15, 1924 (Owen Bryant).

I have also a male specimen that appears to be referable here, but the upper part of the mesopleura (eps 2) is not definitely longitudinally striate and is instead rugoso-reticulate. I consider this specimen may be merely a variety of *borealis*. Locality, Nelson, N. H., September 1, 1907. no collector's name (U.S.N.M.).

PSEN (MIMESA) CINGULATUS (Packard)

Mimesa cingulata PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 410, 1867.
(Male.)

I have not seen the type of this species, nor was it examined by Mr. Rohwer. I have, however, one specimen that I place here with much doubt. It has the femora partly browned, but in other characters agrees very well with the description.

Length, 7 mm.

Originally described from Brunswick, Maine. The National Museum specimen is from Colorado (Baker).

PSEN (MIMESA) PAUPER (Packard)

PLATE 1, FIGURE 18

Mimesa pauper PACKARD, Proc. Ent. Soc. Philadelphia, vol. 6, p. 409, 1867.
(Male.)

Mimesa paupera PROVANCHER, Nat. Can., vol. 13, p. 79, 1882. (Male and female.)

A rather small species which appears to be widely distributed throughout the Northeastern United States and Canada, extending as far west as Illinois. In the general coloration and habitus it closely resembles the species which I accept as *gregarius*, but the abdomen in both sexes has only the apex of the first and all second tergite red, this feature in the female being quite distinctive. The propodeum is very much coarser sculptured than in *gregarius* and *unicinctus*, the enclosure being coarsely rugoso-reticulate, and the lateral areas similarly but more finely sculptured almost to the edges of the enclosure. The petiole of the abdomen varies slightly in length and thickness, but it is never noticeably longer than the swollen part of the segment, and is sharply carinate on the dorsolateral and ventrolateral edges, with the sides almost straight.

The general rule is that the eps 2 is rather coarsely longitudinally striate and the upper edge of eps 1 has some faint striae, while below the surface is alutaceous and furnished with scattered shallow punctures, but sometimes there are more conspicuous longitudinal striae on the upper half or so of eps 1, and in one male I find even vertical rugae on the upper third. I do not care to accept these specimens as entitled to separation from *pauper* on the material available, but should the characters be met with in series of specimens, it would be well to consider them as distinct species.

Length, 6-7.5 mm.

Originally described from Illinois and recorded from New Jersey. Before me there are specimens from Salisbury Cove, Maine; near Bennings, D.C.; Bladensburg, Md.; Falls Church, Turkey Run, and Hunter, Va.; Nelson and Nerepis, N.H.; Chicago, Ill.; Ithaca, N.Y.; Massachusetts; and Canada, the last two without more definite localities. July to October.

PSEN (MIMESA) GREGARIUS Fox

Psen gregarius Fox, Trans. Amer. Ent. Soc., vol. 25, p. 16, 1898. (Male.)

Fox in his original description stated that this species is very similar to *unicinctus*, in which I concur. He distinguished *gregarius* mainly on the shorter and more clavate antennal flagellum and the coarser propodeal rugae. The exceptionally narrow second submarginal cell which he found in his type specimen is not characteristic of the species, a fact that he suspected might be the case. He did not note the differently colored underside of the antennal flagellum in the two species, which I use for the separation of *unicinctus* and another species from the remainder of this group.

The antennal flagellum in typical males has segments 2 to 5 with a rounded elevation on one side, which is highest at middle, but there are many specimens that do not have this elevation and possibly these should be separated as a distinct species. I do not care to go this far, so accept these as a variety, which is briefly distinguished below.

Length, 6.5-8 mm.

Originally described from Colorado. I have before me 1 male and 1 female from the same State, without other data (Baker collection).

PSEN (MIMESA) GREGARIUS SIMPLEX, new variety

Male and female.—Similar to the typical form in coloration, differing essentially in lacking sensory elevations on the antennal flagellum. The striae on the lateral areas of propodeum contiguous with the enclosure are very fine and diverge obliquely outward and slightly backward.

Length, 7-8 mm.

Type (U.S.N.M. No. 44218), male, and 1 male paratype, Adelaide, Idaho, June 22, 1927: allotype, same locality, June 24, 1929: and 1 male paratype, June 10, 1927. Paratypes: Idaho—Castleford, June 21, 1929; Milner, July 9, 1930; Paul, June 20, 1930; Oakley, July 1, 1927; Hollister, June 21 to August 1, 1930; Ximama, June 20 and August 14, 1930. Utah—Blue Creek, June 28 and August 5, 1929. Colorado—no other data (Baker collection).

Twenty-six specimens.

PSEN (MIMESA) MACULIPES Fox

Psen maculipes Fox, Trans. Amer. Ent. Soc., vol. 25, p. 17, 1898. (Male.)

Psen (Mimesa) nigrescens Rohwer, Ent. News, vol. 21, p. 168, 1910. (Male.)

Psen (Mimesa) perplexa Rohwer, Idem, p. 169. (Female.)

This is the only species of this subgenus known to me in which the abdomen of both sexes is without distinct red markings. In some respects it resembles species of the preceding subgenus, but the upper portion of the mesopleura (eps 2) is rather strongly longitudinally striate in both sexes, the petiole of the abdomen is not definitely trisulcate above except at extreme base, and the pygidium of the female is closely covered with quite large punctures, each of which holds the base of a decumbent apically directed stiff hair. The antennae of the male are quite noticeably clubbed at apices, the underside of the flagellum is broadly yellow except on basal part of the first segment, and segments 2 to 7 have each a rather broad elevated longitudinal glossy line on almost the entire extent of one side, least distinct, or even lacking, on the seventh segment. The female has the antennal flagellum even more noticeably clubbed than in the male and has the basal segment shorter than the next two combined.

Length, 7.5–8.5 mm.

Fox's type specimen was from Florida and has not been examined by me, and Mr. Rohwer did not report upon it in his notes on the type. I have carefully examined the type and paratype of *nigrescens* in the National Museum and am convinced that they are the same as Fox's species despite the more northern localities, New Jersey and Pennsylvania. The type specimen of *perplexa* is before me, and I have no hesitation in making the present assignment. Mr. Rohwer in his notes under the original description of *perplexa* says: "The female of *maculipes* Fox is undescribed, and *perplexa* is very like what we may expect this female to be, yet there are so many differences that *perplexa* seems distinct from the Florida species." It appears to me that practically all the distinctions are sexual, and there is no good reason why the sexes should be considered as belonging to two species.

Localities, in addition to those of type material: Highspire, Pa.; Lucaston, N.J.; Beltsville, Md., male; Chain Bridge, Va., male; and Canada, no further data, female.

The male has always the hairs on the face silvery white, and in the females before me there is some variation in the color of these hairs, one from Canada having them almost golden brown, while the type of *perplexus* has them yellowish white.

This is the only species in which the abdomen is without red in both sexes, if my identifications and assignment of sexes are correct, but I have seen two males which I place in *pauper* that appear to have been too long in the killing bottle and the red is very much darkened, so that they appear to have the abdomen entirely black. The scutellum in *pauper* is distinctly longitudinally punctato-striate posteriorly, while in *maculipes* it is glossy and almost impunctate, a distinction that readily separates the males of the two species.

PSENIA, new genus

Generic characters.—Cubitus of hind wing with its base beyond the median transverse vein, as in *Diodontus* (pl. 2, fig. 23), the anal lobe more elongate than in that genus (pl. 2, fig. 24); occipital carina complete, continued round the back of the head and not connected with the one along the posterior and lateral margins of the mouth (pl. 2, fig. 27); posterior lateral lobe of the prothorax always pale, yellowish white; mandibles simple in both sexes; eps 2 not transversely striate, generally punctate and sometimes rugose or reticulate; second and third submarginal cells of fore wing each receiving a recurrent nervure, third submarginal cell shorter than in the other genera, its extreme length not so great as the distance from its apex to the apex of the radial vein, and not greater than its greatest width. The labrum has four short teeth, while in *Psen* the margin is rounded. In addition to these characters, the males have the hypopygial spine flattened dorsoventrally, very much shorter and stouter than in the other genera, frequently entirely concealed, the raised lines bordering the pygidium in the females are convergent on their anterior third or less, not parallel or almost so, the hind tibiae are distinctly curved when seen from above, and the hind tibial spurs of the males are much longer than in *Psen* and resemble more those of *Diodontus*, the posterior or inner one being but slightly thicker than the anterior or outer one only to short of the middle, where it is slightly angulate, and the females have a long downwardly directed bristly hair on each mid and hind coxa that is not found elsewhere in the subfamily.

Genotype.—*Mimesa tibialis* Cresson.

Remarks.—There are apparently four of the described North American species referred to *Psen* that must be transferred here. Viereck erected the genus *Neofoxia* for the reception of the species in which the cubitus of the hind wing has its base beyond the median transverse vein and includes *tibialis* Cresson and *suffusa* Fox in the list of species, but unfortunately he proposed the genus name merely as a substitute for *Psen* of Ashmead, not of Latreille, and designated *Psen atrata* Panzer as the genotype, which compels us to accept his genus as a synonym of *Diodontus* and to propose a new generic name for the North American species. There are several South American and West Indian species in the National Museum collection.

KEY TO THE SPECIES OF GENUS PSENIA

- 1. Males----- 2
- Females----- 13
- 2. Entire mesopleura highly polished, eps 1 sparsely and shallowly punctured, eps 2 entirely impunctate; area between ocelli depressed in center, with a few very minute punctures, posterior ocelli each with a deep impressed line behind them, which does not extend across between posterior margins; antennal flagellum distinctly clubbed, apical segment at base fully three times as thick as basal segment at its apex, and none of segments with evident elevated line or other modification; lateral angle of pronotum sharply produced, almost spikelike; abdomen black, apices of tergites brownish yellow----- *clavicornis*, new species
- Mesopleura generally shagreened or alutaceous and rarely very shiny, if almost glossy then with more distinct punctures, eps 2 always punctate or with other sculpturing; ocellar region not as above, usually quite distinctly punctured; antennal flagellum not clubbed or very inconspicuously so and at least some of intermediate segments modified----- 3
- 3. Antennal flagellum with 3 or 4 of segments toward middle with a quite conspicuous shining papillalike elevation on center of one side, the segments immediately basad and apicad of these with a short raised line or carina which does not extend the whole length of segments (pl. 2, fig. 28); entire mesopleura very coarsely sculptured, the punctures large, contiguous, and deep, giving surface appearance sometimes of being coarsely rugoso-reticulate; hind tarsi whitish yellow, apical segment browned above; space between mouth margin and black of head on central line moderately wide (pl. 2, fig. 29); width of exposed part of third ventral segment not nearly half as great as length of segment on median line-- 4
- Antennal flagellum more distinctly flattened below, inner side of flat part usually along entire length of segments 3 to 8 at least with a rather pronounced carina in dry material, which in cleared material appears as a bare line, which is slightly depressed and has margin of flat part overlapping it rather ridgelike, and no segment with well-developed papilla-like elevations; mesopleura not so coarsely sculptured; third sternite wider at anterior margin except in *pallidistigma*----- 5
- 4. Basal three segments of flagellum lacking sensory elevations; eps 2 and prepectus coarsely rugoso-reticulate----- *longiventris*, new species
- Basal two segments of flagellum lacking sensory elevations; eps 2 and prepectus coarsely punctate, sometimes more or less vertically striato-punctate----- *suffusa* (Fox)

5. Hind tarsi with all segments more or less deeply infuscated, apices of basal four segments usually narrowly yellow, the distinction most easily seen when tarsus is viewed from apex against the light----- 6
Hind tarsi either entirely yellow or with only apical and rarely basal segment partly browned----- 8
6. Basal four segments of flagellum without raised line; antennae black, only apical flagellar segment yellowish below; West Indies.
atricornis, new species
At most basal two segments without a raised line; flagellum conspicuously yellow on almost entire length below; United States----- 7
7. Apical and basal two segments of flagellum without raised line, latter complete on all except preapical segment, and very fine, not darkened or shining; eps 2 alutaceous and with rather small punctures, eps 1 more definitely alutaceous and with larger punctures, more granulose than striate on posterior third----- *sayi* (Rohwer)
Only basal segment of flagellum definitely without raised line, apical segment with a trace of one, the elevation broader than in *sayi*, on no segment extending completely along its length, darker than remainder of segments and slightly shining; eps 2 coarsely rugoso-reticulate, eps 2 more coarsely and closely punctate than in *sayi* and with posterior third rather coarsely striate----- *littoralis*, new species
8. Third ventral segment of abdomen not nearly half as wide on exposed part of its anterior margin as long in center; stigma pale yellow; occipital carina very much more elevated than usual, not vertical, and with a well-defined notch in the center below (pl. 2, fig. 30).
pallidistigma, new species
Third ventral segment of abdomen much wider at anterior margin, exposed part much over half as wide as the central length of segment; stigma dark; occipital carina normal, moderately elevated and vertical----- 9
9. Flagellum with segments 5 to 8 quite distinctly, almost angularly, elevated on one side, highest point close to middle of each segment (pl. 2, fig. 31); propodeum laterad of enclosure very finely sculptured, striate or slightly reticulated, appearing almost granulose except under a high-power lens.
angulicornis, new species
Flagellum with less evident elevations on intermediate segments, when these are visible in profile the highest point is well beyond the middle of segments; propodeum with coarser rugoso-reticulate sculpture laterad of enclosure (pl. 2, fig. 32)----- 10
10. Mesonotum with greater portion of its surface transversely and deeply striato-punctate, the scutellum longitudinally striato-punctate; head between ocelli and occipital carina finely but distinctly transversely striate----- 11
Mesonotum deeply and subcontiguously punctate, without distinct transverse striae, scutellum with greater part of its surface rather finely punctate; back of head not striate----- 12
11. Legs except coxae fulvous-yellow; basal two segments of abdomen including petiole red, petiole castaneous----- *rufibasis*, new species
At least hind femora partly and entire petiole black- *marginata*, new species
12. Enclosure as in plate 2, figure 33----- *tibialis* (Cresson)
Enclosure as in plate 2, figure 34----- *aerofacies*, new species
13. Hind tarsi largely fuscous, yellow only at extreme apices of basal four segments, which pale color is best seen when tarsus is viewed from tip against the light----- 14
Hind tarsi yellow, sometimes with apical segment browned above----- 17

14. Second and third tergites broadly black, red only on lateral portions of hind margins, pale color not extending entirely across posterior margin; West Indies----- *atricornis*, new species
Apex of first, all of second, and base of third tergite bright red; United States----- 15
15. Eps 2 evenly and quite prominently convex, microscopically shagreened or alutaceous, and with very small isolated punctures ($\times 34$), posterior part of eps 1 granulose, nowhere striate----- *sayi* (Rohwer)
Eps 2 moderately coarsely longitudinally striate or punctato-striate----- 16
16. Scutellum slightly alutaceous, not highly polished on disk and there rather uneven, the punctures quite large, deep, and isolated on each side, much closer and smaller on posterior margin----- *littoralis*, new species
Scutellum not alutaceous, highly polished on disk, punctures smaller and widely spaced except on posterior margin, where they are quite closely placed----- *texana*, new species
17. Femora and tibiae of all legs fulvous-yellow, the tarsi whitish yellow, all of first and second tergites of abdomen red, petiole castaneous, remainder of abdomen glossy black, the apices of tergites brownish yellow; eps 2 coarsely punctato-striate, eps 1 not distinctly shining because of presence of fine shagreening or alutaceous sculpturing, the punctures on upper part large and contiguous, gradually becoming smaller and wider spaced toward lower level; prepectus vertically striato-punctate on upper part; propodeum coarsely rugoso-reticulate on entire dorsum and to a large extent on sides; space between occipital carina and one around mouth not nearly so wide as first segment of fore tarsus seen from above; hairs of face with a distinct golden tinge----- *rufibasis*, new species
Femora and tibiae not entirely yellow, at least former and hind tibiae partly black or dark brown; first tergite at least largely black; other characters not as above in their entirety----- 18
18. Intercarinal space in center of ventral surface of head as wide as first segment of fore tarsus seen from above----- 19
Intercarinal space in center of ventral surface of head not nearly so wide as first segment of fore tarsus seen from above----- 20
19. Abdomen partly bright red, apex of second and usually all of third tergites red; fore and mid tibiae whitish yellow, more reddish yellow on anterior and posterior surfaces, hind tibiae as usual, yellowish white on basal third or less and dark brown or fuscous beyond; mesopleura with moderately large shallow punctures, well separated on upper half of eps 1 and more closely placed and smaller on eps 2----- *suffusa* (Fox)
Abdomen glossy black, apices of tergites brownish yellow; all tibiae black, fore pair whitish yellow on dorsal surface almost to apex and on almost all of anterior surface, mid and hind pairs whitish yellow on basal third or less; mesopleura with eps 2 closely punctato-striate, and upper part of eps 1 coarsely subtransversely wrinkled and with a few large punctures, the wrinkles fading out near midway to lower extremity and replaced by rather large sparse shallow punctures.
longiventris, new species
20. Mesonotum coarsely and rather irregularly rugoso-punctate, almost furrowed, especially on disk and anterior lateral angles; mesopleura very minutely shagreened, alutaceous, eps 2 with shallow punctures and traces of longitudinal wrinkles, eps 1 much more distinctly wrinkled and punctured on upper half, sculpturing becoming fainter below; propodeum

- coarsely rugoso-reticulate, becoming striate basally alongside enclosure; abdomen glossy black, apices of tergites rather conspicuously brownish yellow to testaceous in color----- *marginata*, new species
- Mesonotum not at all rugose or furrowed on disk, anterior lateral angles with separated punctures; eps 1 not wrinkled longitudinally on upper half----- 21
21. Abdomen very conspicuously red on at least some part of one or more of first three tergites; propodeum with very fine straight striae on almost entire length along sides of enclosure, which are directed obliquely outward and backward, and posterior face finely reticulate rugose, appearing under a moderately high-power lens as almost granulose----- 22
- Abdomen not at all red on any part of any of first three tergites, though apices of these may be brownish yellow; propodeum except in *minuta* more coarsely sculptured along sides of enclosure and posterior face coarsely reticulate----- 25
22. Smaller species, not more than 7 mm in length, with abdomen extensively red, usually apex of first tergite, all of second, and at least base of third, red; occipital carina practically obsolete for some distance on each side of central line below----- 23
- Larger species, not less than 7 mm in length, with abdomen less extensively red, sometimes with second tergite largely black basally; occipital carina well developed, erect, to central line below----- 24
23. Eps 2 almost glossy and with very small punctures. *angulicornis*, new species
Eps 2 but slightly shining and with moderately large subcontiguous punctures----- *angulicornis* var.
24. Second abdominal tergite extensively blackened on basal half or more; eps 2 dull, appearing granulose, and with extremely small punctures, which are not clearly discernible even with a magnification of 150; apical segment of hind tarsus brown, darker than other segments; petiole of abdomen not half as long as hind femur----- *brevipetiolata* (Rohwer)
- Second abdominal tergite entirely red; eps 2 distinctly shining, faintly alutaceous, with rather widely separated punctures quite distinct under a magnification of 150; apical segment of hind tarsus whitish yellow like the other segments----- *pallidistigma*, new species
25. Small species, 5 mm in length; sculpture of propodeum except enclosure very faint, consisting of fine striae, which are visible only posteriorly at curve under a magnification of 34 diameters, posterior face without distinguishable reticulations----- *minuta*, new species
- Larger species, about 7 mm in average length; sculpture of propodeum much coarser, consisting of rugose reticulations on most of area outside of enclosure----- 26
26. Petiole as long as thick part of first abdominal segment; pygidium not twice as long as its width at center; propodeum with rather fine reticulations, enclosure without a large glossy diamond-shaped central area----- *albifacies*, new species
- Petiole of abdomen not so long as remainder of first segment; pygidium more than twice as long as its width at center; propodeum coarser sculptured----- 27
27. Hairs of face silvery white; enclosure of propodeum without a large diamond-shaped glossy central area (pl. 2, fig. 33)----- *tibialis* (Cresson)
- Hairs of face brassy yellow; enclosure of propodeum with a large diamond-shaped glossy central area (pl. 2, fig. 34)----- *aerofacies*, new species

PSENIA TIBIALIS (Cresson)

PLATE 2, FIGURES 27, 33, 38

Mimesa tibialis CRESSON, Trans. Amer. Ent. Soc., vol. 4, p. 488, 1872. (Male and female.)

This species is black in both sexes, with a more evident pale posterior margin to the segments in the female than in the male, the face is silvery white haired, antennal flagellum broadly yellow below on entire extent except on the first segment, the fore and mid tibiae and all tarsi yellow, hind tibiae broadly blackened in middle, to apex on the outer side, hind tarsus of female usually with the apical segment browned above.

The antennal flagellum of the male is not at all clubbed, while that of the female is distinctly so, the sensory areas on the male flagellum are linear, present usually on all but the apical and basal two segments, though there is some variation in the presence or absence on the penultimate, and usually the last or even the one preceding it is distinctly shorter than the other, not extending along the entire length of the segment. The enclosure of the propodeum is irregularly rugoso-reticulate (pl. 2, fig. 33), and the areas laterad of the latter are rather coarsely reticulate, the mesopleura is almost dull because of the presence of shagreening, and the punctures are rather large though not deep, and moderately widely separated, closer on *eps* 2. The female pygidial area is usually about 2.5 as long as wide in center.

Length, 6–7.5 mm.

Originally described from Texas and District of Columbia. I have seen it from these localities and also Louisiana.

The District of Columbia male lacks a sensory area on the apical three flagellar segments.

PSENIA AEROFACIES, new species

PLATE 2, FIGURE 34

Female.—Very similar to *tibialis*, differing essentially in the yellow haired face and the sculpture of the propodeal enclosure (pl. 2, fig. 34).

Male.—Similar to the male of *tibialis*, the face being silvery white haired, but the propodeal enclosure is sculptured as in the female.

Length, 7.5–8.5 mm.

Type (U.S.N.M. No. 44219), female, Rosser, Tex., June 28, 1905, on *Cassia* sp., Hunter No. 450 (C. R. Jones). Allotype, Victoria, Tex., July 8, 1907, on *Acacia* sp. (J. D. Mitchell). Paratype male, Mexico, no other data (Baker collection).

PSENIA ALBIFACIES, new species

Female.—Very similar to the female of *tibialis*, differing in having the abdomen without distinct pale apices to central part of the tergites, the pygidium not so long or so narrow, the occipital carina obsolescent as it nears the central line on ventral surface of head and the intercarinal space rather wider. The enclosure of the propodeum is quite similar to that of *tibialis*, but the striae on upper part of the lateral areas outside of it are finer. The mesopleura is also more finely punctured, especially on eps 1, where it is rather distinctly shining.

Length, 8 mm.

Type.—U.S.N.M. No. 44220, from Sioux City, Iowa, July 13, 1929 (C. N. Ainslie).

PSENIA CLAVICORNIS, new species

PLATE 2, FIGURE 35

Male.—A small shining black species much resembling a small specimen of *suffusa*, but the abdomen has a narrow reddish apex to the first and second tergites and the apices of the following tergites yellowish brown. The face is silvery white haired, the antennae are testaceous-yellow, with the scape and upper surface of the flagellum fuscous. Femora dark brown except at apices, tibiae and tarsi testaceous-yellow, hind pair yellowish brown except at bases, the latter not very much paler than the remainder, hind tarsus with the apical segment hardly darker than basal four. Stigma and wing veins brown.

Frons glossy, appearing impunctate except under a very high-power lens, the ocelli well elevated, the surface sunken between the ocelli, the distance between the posterior pair subequal to that between either and eye margin; antennal flagellum about as long as head and thorax, much clubbed apically, the penultimate and antepenultimate segments distinctly wider than long, and no segment with distinguishable sensory elevated area. Mesonotum and scutellum with small widely separated punctures on a glossy surface; mesopleura glossy, eps 2 apparently impunctate, eps 1 with very small piliferous punctures, which are widely separated and visible only under a magnification of about 50 diameters; propodeum with the sculpture rather coarse, enclosure as in plate 2, figure 35, the areas laterad of it quite widely striate, becoming rugoso-reticulate on the curve and posterior face. Abdomen slender, petiole about four fifths as long as hind femur, gradually merging into the thickened part, which is not half as wide at apex as its length from there to petiole; basal exposure of third tergite not half as wide as length of sternite in center. Legs and wings normal for the genus.

Length, 6.5 mm.

Type.—U.S.N.M. No. 44221, from Arizona (no. 2546, Baker collection).

The antennae are typical in general shape to those of normal females of the genus, but the number of segments is that usually found in males, so that the possibility of the type being a hermaphrodite is extremely remote.

PSENIA SUFFUSA (Fox)

PLATE 2. FIGURES 23, 29, 36, 37

Psen suffusus Fox, Trans. Amer. Ent. Soc., vol. 25, p. 18, 1898. (Female.)

This species was originally described from females only, and it is surprising to discover, if my determination is correct, that there is a striking sexual dimorphism in the species, the male being slenderer and having the mesopleura very much more deeply and more closely punctured than the female. The abdomen in the male has merely the apices of the tergites on basal half red with a greater extension of that color on the venter, while the female has the apex of second and usually the basal half or more of the third segment red.

Structurally the male is very similar to that of the next species, but the characters listed in the key readily separate them. In *clavicornis* the form of the abdomen is similar to that of this and the next species, but in neither of the latter is the antennal flagellum at all clavate or lacking sensory areas. I believe the structure of the sensory areas is sufficient to distinguish *suffusa* and *longiventris* from their allies, and an important additional character, present to the same degree in both sexes, is the exceptional central width between the carinae on the center line of the ventral surface of the head. I figure the male hypopygium of *suffusa* to show the relative positions of the various segments comprising it (pl. 2, fig. 36). The female has the pygidial area fully twice as long as its width at center, the mesopleura sparsely supplied with rather large punctures, smaller and more closely placed on eps 2, the enclosure of the propodeum more closely reticulated than in *longiventris*, and the areas laterad of it very finely striate up to the curve where they become reticulate. The abdomen of the female is stouter than in the male, with shorter petiole and wider bases to the sternites.

Length, 6.5–8 mm.

Originally described from Las Cruces and Rincon, N.Mex. I have a large series of both sexes before me, two being from Las Cruces. The others are from the following localities: Mesilla, 2 miles north of Vado, and La Luz, N.Mex.; Phoenix, Higley, Tucson, and Sacaton, Ariz.; and Lindsay and Redlands, Calif.

I am quite confident that Fox had more than one species in his type series as he states that the abdomen may be more preponder-

antly red than I describe above, and particularly as he states that the hind tarsi may be entirely yellow or with merely yellow rings. I suspect that a critical examination of the types will disclose that there is a mixture of *suffusa* as here accepted and *sayi* Rohwer or a closely allied species. However, I restrict the name to the form with entirely yellow hind tarsi as here described.

PSENIA LONGIVENTRIS, new species

PLATE 2, FIGURE 28

Male and female.—Very similar to *suffusa*, differing in its darker color as indicated in the key for both sexes, and in the male in the structure of the antennal flagellum and the sculpturing of the mesopleura. The specimens average larger than those of *suffusa* and the enclosure of the propodeum is very similar to that of *clavicornis*, though the lateral areas are much more finely striate. The stigma of the wing in this and the preceding species is fuscous, and the occipital carina is not at all reflexed outward as in *pallidistigma* but erect.

Length, 8–9 mm.

Type (U.S.N.M. No. 44222), male, and 13 male paratypes, Higley, Ariz., July 15, 1917 (E. G. Holt); allotype, Gilbert, Ariz., July 18, 1917 (E. G. Holt). Paratypes, all males: 3, Holtville, Calif., July 26, 1917, one on cotton (E. A. McGregor); 12, Lindsay, Calif., on *Helianthus*, orange, and *Asclepias* (W. A. Davidson, C. E. Pemberton); 1, El Centro, Calif., on cotton (W. D. Pierce); 2, Mount Superstition, near Higley, Ariz., July 24, 1917 (E. G. Holt); and 1, Arizona, without more definite locality (Baker collection).

PSENIA PALLIDISTIGMA, new species

PLATE 2, FIGURES 30, 39

Male and female.—Very similar in general coloration to *suffusa*, but the wings are more decidedly whitish hyaline, the stigma is paler, brownish yellow in male, and the male has the abdomen more broadly red, while both sexes have no brown color on the apical segment of the hind tarsus.

Structurally the male differs from that of either of the two next preceding species in the more elongate sensory areas of the antennal flagellum, which are present on the fourth to tenth segments, inclusive, and the peculiarly reflexed lower portion of the occipital carina (pl. 2, fig. 30), a character not met with elsewhere in the genus as far as I have found. The female has this feature lacking, but it has the same closely rugoso-reticulate propodeal enclosure as the male (pl. 2, fig. 39), a rather striking character. The mesopleura

and prepectus are rather deeply but not contiguously punctate, the eps 2 more closely so. Lateral areas of the propodeum appearing almost granulose in the male, but under a high-power lens distinctly rugose or reticulate, in the female these areas are closely and rather evenly striate almost up to the curve, at which point they become rugose. Petiole of the abdomen in the male almost as long as the hind femur and longer than the swollen apical part. Legs and wings normal.

Length, 8-9 mm.

Type (U.S.N.M. No. 44223), male, Mount Superstition, near Higley, Ariz., July 24, 1917 (E. G. Holt); allotype, Cotulla, Tex., May 11, 1906 (J. C. Crawford). One male paratype, Higley, Ariz., July 15, 1917 (E. G. Holt).

PSENIA RUFIBASIS, new species

PLATE 2, FIGURE 32

Male and female.—This species does not belong to the same group as *suffusa*, the intercarinal space on venter of head being much narrower and the abdominal petiole shorter. The hairs of the face in the female are brassy yellow, the antennal scape is broadly yellow below in male and at apex in female, and the flagellum is broadly yellow below on even the basal segment. Petiole of abdomen chestnut-colored, first and second tergites entirely red in female, partly dark on disk in male. Femora and tibiae of all legs fulvous-yellow, bases of hind tibiae and all the tarsi more whitish yellow. Fore wings brownish hyaline, veins and stigma dark brown.

Female.—Front with small separated punctures; clypeus almost rounded at apex; intercarinal space at center about half as wide as basal segment of fore tarsus at apex. Mesonotum broadly longitudinally punctato-striate on disk, the scutellum similarly sculptured; enclosure of propodeum as in plate 2, figure 32; mesopleura dull, shagreened, with rather coarse punctures in wrinklelike striae, which are oblique on lower part and closer and almost longitudinal on upper part (eps 2). Petiole about three fourths as long as hind femur and subequal to the apical part of the segment; pygidium about 2.5 as long as its width at center. Legs and wings normal.

Male.—Differs from the female in having the face white haired, the flagellum not clubbed, flat below and with a linear sensory elevation on basal and apical segments, faint on preapical one.

Length, 8-8.5 mm.

Type.—U.S.N.M. No. 44424, female, Jekyll Island, Ga., June 25, 1923 (W. L. McAtee); allotype, Tifton, Ga.

In keeping with the practice of the Bureau of Biological Survey, the type specimen is presented to the National Museum.

PSENIA MARGINATA, new species

PLATE 2, FIGURE 40

Male and female.—Very similar to *rufibasis*, but that species is readily distinguished in both sexes by the predominantly red color of the basal two segments on the abdomen, even the petiole being chestnut-red. The petiole in *marginata* is glossy black, the first tergite is narrowly and the other tergites more broadly testaceous at apices, though in one male the pale apices are more red than yellow. The femora in both sexes of typical examples are largely black or dark brown, paler at apices of the fore and mid pairs, and the tibiae and tarsi are yellow, the hind tibiae largely black beyond the whitish yellow basal third. Facial hairs of female yellowish white.

In structure there is very little difference between this species and *rufibasis*, the coarse sculpture of the entire thorax setting them apart from other closely allied species. Apical sternite of male as in plate 2, figure 40.

Length, 7–9 mm.

Type (U.S.N.M. No. 44225), female, allotype, and six paratype males, Louisiana, no other data (Baker collection). Paratypes, male and female, Opelousas, La., no other data (G. R. Pilate), and Yemassee, Buckfield Plant., S.C., October 1, 1926 (J. T. Rogers).

The last listed specimen is a male that is larger than the others, 10.5 mm, and has the femora with the exception of the extreme bases of the hind pair fulvous-yellow. I do not care to consider it as other than a variety of *marginata*.

PSENIA BREVIPETIOLATA (Rohwer)

PLATE 2, FIGURE 41

Psenulus (Neofoxia) brevipetiolatus ROHWER, Proc. Ent. Soc. Washington, vol. 12, p. 100, 1910. (Female.)

I have examined the type specimen in the National Museum, and though the abdomen has been broken off through the petiole and rather badly glued together the characters are sufficiently well preserved to enable me definitely to place it in the key and to determine another female now before me as belonging to the species. The very finely sculptured eps 2 of this species is distinctive, this part of the mesopleura appearing granulose even under a very high-power lens, the lower part, eps 1, being very finely shagreened or alutaceous and furnished with sparse small punctures. The propodeum has the enclosure with rugae, and the lateral areas finely striate (pl. 2, fig. 41). The petiole of the abdomen is about half as long as the swollen part of the segment and not more than half as long as the hind femur; apex of second and base of third tergite red; pygidium about

three times as long as its width at center. The head is as in *rufibasis*, but the intercarinal space is even narrower in center, there is a quite marked thickening or angle of the occipital carina on each side in line with the lower margin of each eye which is not evident in most of the other species, the antennal scape is fuscous, and the hairs of the face are white.

Length, 8 mm.

Originally described from Los Angeles County, Calif. The single female before me, in addition to the type, is from Lindsay, Calif., on *Asclepias* (W. A. Davidson).

The correct type number of this species is U.S.N.M. No. 12855, not 12355 as published.

PSENIA SAYI (Rohwer)

Psenulus (*Neoforia*) *sayi* ROHWER, Proc. Ent. Soc. Washington, vol. 12, p. 100, 1910. (Female.)

This species is one of a group in which the hind tarsi are fuscous, with the apices of the basal 4 segments narrowly yellow, which annulation is best seen when the tarsus is viewed from the tip against the light. The various species are best distinguished by the sculpture of the mesopleura and the propodeum as stated in the foregoing key.

The mesopleura in the male is more distinctly shining than in the female, and the punctures are larger, especially on the upper portion and posteriorly on the lower portion, on the latter assuming the appearance of reticulations or irregular striae. The petiole of the abdomen in the male is also longer than in the female, in some specimens almost as long as the hind femur. The fore and mid femora are yellow above to a variable extent in both sexes, the abdomen in the male has in the Alabama and Louisiana specimens a preponderantly blacker tone than in the series before me from Arizona, the apices only of the first and second and the base of the second tergites being more or less broadly reddish, while in the Arizona specimens the entire second segment and a large part of the anterior half of the third segment are red. The Arizona specimens are also slightly longer and slenderer, though it is my opinion that they belong to this species. I have seen no females from Arizona that I can refer here. The available females are all from farther east, and all have the apex of the first, all of the second, and at least the basal half of the third tergite red. The flagellar elevations of the male are linear and are present on the third to tenth segments as a rule, though there may be a very faint trace on the second and sometimes hardly a trace on the tenth segment. The space between the carina

on the central part of ventral surface of the head is very narrow, similar to that of *tibialis*, which it closely resembles in many respects.

Length, 6-7 mm.

Originally described from Onaga, Kans., U.S.N.M. No. 12856. There is one paratype so labeled by Mr. Rohwer and bearing the same number as the type, from Texas, which is not listed as a paratype, though no doubt it is the specimen referred to in the concluding paragraph under the description as "the species recorded as *Mimesa pauper* by Cresson in Hymenoptera Texana."

Other localities represented by material before me are as follows: District of Columbia, Louisiana, Alabama, New Mexico, and California.

PSENIA TEXANA, new species

Male and female.—Very similar to *sayi* and the species following this, differing from the first named in the coarser sculptured upper part of the mesopleura (eps 2) and from *littoralis* in having the scutellum more highly polished, and no evident sensory elevation on the second flagellar segment. The female in particular has the scutellum highly polished and smooth as against the quite uneven and dull surface of that part in *littoralis*. The hind tibiae in both sexes have a lesser proportion of their base yellow than is the case in the other species, but I do not place much dependence upon this as a distinguishing specific character.

Length, 6-7.5 mm.

Type (U.S.N.M. No. 44226), female, allotype, and one female paratype, Brownsville, Tex., 1921 (J. C. Bridwell).

PSENIA LITTORALIS, new species

Male and female.—Shining black. Antennal flagellum yellow below on entire extent in the male, and except on basal segment in female; facial hairs silvery white in both sexes. Mesopleura not so distinctly shining as mesonotum. Abdomen shining black, apices of first three and bases of second and third tergites rather narrowly red in male, apex of first, all of second, and base of third red in female. Femora black, in male partly yellow above and at apices of fore and mid pairs, tibiae of fore and mid legs yellow, partly browned below in female only, fore and mid tarsi yellow, apical segment of mid pair brown in female; hind tibiae blackened except at bases; hind tarsi fuscous, the apices of all segments narrowly yellow. Wings grayish hyaline, stigma and veins fuscous.

Male.—Antennal flagellum not clubbed, longer than head and thorax combined, the sensory areas almost linear, black, entire, present on all but the basal and apical segments, and sometimes rudi-

mentarily so on apical one; intercarinal space on center of ventral surface of head almost linear; front finely punctured, more glossy and less closely punctured between ocelli; space between posterior ocelli greater than distance of either from eye. Mesonotum with moderate sized and quite deep punctures which are not regularly arranged but more aggregated along the linear depressions; scutellum similarly punctured, least closely so on disk, the apex with a central depressed longitudinal line that does not extend to anterior margin; mesopleura with deep closely placed punctures about as large as those on mesonotum, eps 2 appearing rugoso-reticulate. Propodeum as in *tibialis*, the central part of enclosure without a definite bare glossy diamond-shaped area, and the reticulations extending up to the lateral edges of enclosure. Petiole about as long as the enlarged part of the segment and fully two thirds as long as hind femur. Legs and wings normal.

Female.—Antennal flagellum clubbed; clypeus with the central third almost transverse, the extremities of that part with a slight angle. Mesopleura with the punctures much smaller and wider placed than in male, eps 2 striate.

Length, 7–8 mm.

Type (U.S.N.M. No. 44227), male, Chesapeake Beach, Md., July 3, 1924 (J. R. Malloch); allotype, same locality, July 2, 1916 (W. L. McAtee).

The specimens have been donated to the National Museum by the collectors.

PSENIA ATRICORNIS, new species

Male and female.—The male is much darker in color than any of the three next preceding species, having the abdomen appearing entirely black on dorsum except the narrow and rather indistinctly paler apices to the tergites, and the antennal flagellum black except at extreme tip where it is brownish yellow. The female which I place with this male is marked with red triangles on each anterior lateral angle of the third, and the posterior lateral angles of second and third tergites when seen from above, the incurved ventral parts of the tergites and the sternites of these segments almost entirely red. The antennal flagellum is also yellow below except on the basal segment. The hairs of the face are silvery white in both sexes. The male has the sensory areas of the flagellum much as in *littoralis*, but the type specimen has the basal two without elevations and the apical one with a partial one at base. The male has the lower part of the mesopleura with large punctures, becoming striato-punctate anteriorly, and the upper part, eps 2, with small punctures. The female is much less coarsely punctate on these parts, the eps 2 being but feebly punctured. Propodeum as in *littoralis*. Petiole in male

as long as remainder of segment and about two thirds as long as hind femur. In female distinctly shorter than remainder of the segments and about half as long as hind femur. Wings and legs normal.

Length, 7–8 mm.

Type (U.S.N.M. No. 44228), male, Aguadilla, Puerto Rico, January 1899 (A. Busck). Allotype, Baragua, Cuba, February 12, 1925, at light, T.P.R.F., Ent. No. 346 (C. F. Stahl); paratype female, Santiago de las Vegas, Cuba, June 21, 1917 (R. Cardin).

My association of the sexes may be erroneous but there is no way to determine if this is so.

A male from Portland, Jamaica, may belong to this species, but it lacks the abdomen and is otherwise in poor condition. The abdomen that is mounted on the card with it is that of a female of the genus *Psen*, subgenus *Mimumesa*.

PSENIA ANGULICORNIS, new species

PLATE 2, FIGURE 31

Male and female.—Very similar in general coloration to *sayi*, the abdomen of the male with the apices of first three tergites and bases of second and third red, the second segment usually entirely and sometimes all or nearly all of the third tergite in the female red. The hind tarsi are entirely whitish yellow, or the apical segment is slightly brownish above.

The antennal flagellum of the male is quite distinctive (pl. 2, fig. 31) being almost angularly elevated in center of one side on segments 5 to 8. The propodeum has the enclosure rather finely rugoso-reticulate in both sexes, and the lateral areas are finely divergently striate above, becoming finely rugoso-reticulate at the curve. Petiole in male longer than in female, as long as the swollen part of the segment and about three fourths as long as hind femur, in female about half as long as hind femur. Occipital carina evanescent as it approaches central line of ventral surface, the intercarinal space almost linear. Wings and legs normal.

Length, 6–6.5 mm.

Type (U.S.N.M. No. 44229), male, allotype, and two female paratypes, Plano, Tex., July 1907 (E. S. Tucker). Paratypes: One female, same locality as type, August 1907 (E. S. Tucker); male, Neucrest. Tex., April 28, 1896 (C. L. Marlatt); male, Brownsville, Tex., 1921 (J. C. Bridwell); female, Tifton, Ga., no other data (Ashmead collection).

The last listed specimen is slightly different from the others.